2023 CHINA ENERGY DATA

Authored by:

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This report is authored by **WANG Qingyi** and reviewed and edited by **Institute for Global Decarbonization Progress (iGDP).**

About the author

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About iGDP

The Institute for Global Decarbonization Progress (iGDP) is a non-profit think tank focusing on green and low-carbon development with offices in China and Europe. Established in Beijing in 2014, iGDP is dedicated to supporting China's green and low-carbon practices, contributing to the global effort to address climate change, and providing decision-makers, investors, and local communities with forward-thinking solutions.

Through interdisciplinary, systematic, and empirical policy research, iGDP promotes robust energy and climate solutions with high implementation and investment feasibility. iGDP works with its partners to promote a zero emissions future and tell the story of China's green and low-carbon development.

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Any contents or opinions expressed in this report are those of the author and aim to promote discussion in related fields. They do not necessarily reflect the view of other supporting scholars or organizations. The data and information included in this report come from publicly available materials. We endeavor to maintain accuracy and comprehensiveness, but occasional oversights may occur. Please contact us if you have any questions.

Introduction

Energy Data 2023 was authored by Mr. Wang Qingyi, one of China's leading energy experts, with research and editing assistance from Institute for Global Decarbonization Progress (iGDP). The Energy Data publication series have run since 2004, with English translations published since 2017. This series collate and organize data published by China's official statistics bureaus and industry associations covering key sectors, as well as authoritative international energy agencies. The goal is to facilitate access by researchers and policymakers to comprehensive, multi-dimensional, and long time-scale energy data that accurately captures China's energy profile. The English version of the Energy Data 2023 report contains 36 data energy indicator tables and 2 special topics covering China's energy economy, energy production and consumption, energy efficiency and technology, energy prices, and energy-related pollutant emissions and carbon emissions.

Abbreviations

BERC	Building Energy Conservation Research Center of Tsinghua University
CAREI	China Association of Rural Energy Industry
CBMF	China Building Materials Industry Association
CCIA	China Coal Industry Association
CEC	China Electricity Council
CERS	China Energy Research Society
CISA	China Iron and Steel Industry Association
CNPC	China National Petroleum Corporation
CPCIF	China Petroleum and Chemical Industry Federation
CPEA	China Petroleum Enterprise Association
CSES	China Solar Energy Society
CWEA	China Wind Energy Association
GACC	General Administration of Customs
IEA	International Energy Agency
IEEJ	Institute of Energy Economics, Japan
IMF	International Monetary Fund
MEE	Ministry of Ecology and Environment
MIIT	Ministry of Industry and Information Technology
MNR	Ministry of Natural Resources and Forestry
MOA	Ministry of Agriculture and Rural Affairs
MOT	Ministry of Transport
MOHURD	Ministry of Housing and Urban-Rural Development
MWR	Ministry of Water Resources
NBS	National Bureau of Statistics
NDRC	National Development and Reform Commission
NEA	National Energy Administration
OICA	International Organization of Motor Vehicle Manufacturers
PBS	Provincial Bureau of Statistics
SERC	State Electricity Regulatory Commission
WB	World Bank
WSA	World Steel Association

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Special Topic: Analysis of China's Major Socioeconomic and Energy Indicators in 2023

1. GDP

In 2023, China's GDP reached $17.9 trillion, surpassing the total of the 27 EU countries, equivalent to 97.55% of China's total. Guangdong and Jiangsu reached GDP of $1.93 trillion and $1.82 trillion respectively, rivaling many nations. According to the World Bank, the GDP per capita of developed countries is expected to surpass $20,000. Cities such as Shenzhen, Shanghai, Beijing, and Guangzhou have now reached this developed country benchmark.

2. Economic Structure

The primary sector accounted for 7.1%, secondary sector 38.3%, and tertiary sector 54.6% of the economy.

3. Population

The national population was 1.41 billion in 2023, with a decrease of 2,080,000 from the previous year.

4. Resident Disposable Income

In 2023, the per capita disposable income by quintiles shows that the high-income group earned 95,055 yuan, 10.3 times more than the low-income group's 9,215 yuan.

5. Consumer Price Index (CPI)

The CPI increased by 0.2% over the year.

6. Electricity Consumption Per Capita and for Residential Use

Per capita electricity consumption: 6,539 kW.

Residential electricity per capita: 958 kWh.

7. Civilian Car Ownership

336 million vehicles.

8. Major Energy Production

Raw coal: 4.71 billion tons, crude oil: 209 million tons, natural gas: 232.4 billion m^3, electricity: 94,564 TWh.

9. Crude Oil Dependence on Imports

72.9%

10. Energy Consumption

The energy consumption per 10,000 yuan of GDP decreased by 0.5% from the previous year.

11. $PM_{2.5}$ Average Concentration

30 $\mu g/m^3$

12. CO_2 Emissions

12.6 billion tons (IEA).

13. China's World-Leading Energy Technologies

- High-speed rail: 45,000 km, comprising 70% of the global total.

- Ultra-supercritical coal-fired power plants: 170 in operation as of 2022, exceeding the total in other countries.

- Installed capacity of renewable energy in China: 1,513 GW, including 420 GW of hydro and 440 GW of wind; USA: 387 GW, including 87 GW of hydro, 148 GW of wind.

- New energy vehicles: 20.4 million units, 2.33 million units in the USA (as of 2022).

- Supercomputers as of 2022: 175 in China, 128 in the USA.

- Industrial robots as of 2022: over 50% of the global share, with a density of 392 per 10,000 workers in manufacturing.

- Online retail sales totaled 15.4 trillion yuan, taking up 27.6% of total retail sales, with mobile payment transactions processed by banks amounting to 499.62 trillion yuan, a year-on-year decrease of 11.15%.

14. Technological Self-Reliance

Taking as an example semiconductor chips, which have a broad range of applications and significant energy-saving potential, China imported chips worth $349 billion in 2023, while chip exports fell by 5% year-on-year to $132 billion. The USA began to ban on high-end chips and key technologies to China from September 15, 2023.

Table 1 Key Energy and Economic Indicators

	1949	1978	2000	2010	2015	2020	2021	2022
Population (10,000)	54167	96529	126743	133920	137462	141178	141260	141175
Proportion of city and town population (%)	10.6	17.9	36.2	49.7	56.1	63.9	64.7	65.2
GDP growth rate (%)		11.7	8.4	10.6	6.9	2.3	8.1	3
GDP (100 million Chinese yuan)	466	3650	99215	413030	689052	1015986	1143670	1210207
Economic structure								
Primary industry (%)	68	27.9	15.1	10.1	9.0	7.7	7.2	7.3
Secondary industry (%)	13.0	47.9	45.9	46.7	40.5	37.8	39.4	39.9
Tertiary industry (%)	19.0	24.2	39.0	43.2	50.5	54.5	53.4	52.8
GDP per capita (USD)	23	149	949	4556	8007	10507	12551	12741
Primary energy consumption (Mtce)	26.0	571.4	1469.6	3606.5	4299.1	4980	5240	5410
Crude oil import dependency/%		-12.4	26.4	54.5	60.7	73.0	72.1	71.2
Urban resident disposable income per capita (Chinese yuan)	100	343	6280	19109	31195	43834	47412	49283
Rural resident net income per capita (Chinese yuan)	44	134	2253	5919	11422	17131	18931	20133
Civil vehicle ownership (10,000 vehicle)	5.1	135.8	1608.9	7801.8	16284.5	28087	30151	31903
Energy consumption per capita (kgce)	48	594	1160	2693	3128	3527	3709	3832
Electricity per capita (kWh)	8	218	1063	2752	4142	5320	5885	5820
Electricity production (TWh)	41.3	256.6	1355.6	4207.1	5814.6	7779.1	8112.2	8848.7
Steel output (Mt)	0.16	31.8	128.5	637.2	803.8	1053.0	1032.8	1017.9
Cement output (Mt)	0.66	65.2	597.0	1881.9	2359	2377	2362	2130
Total amount of export goods (USD 100 million)	5.5	97.5	2492.0	15777.5	22739.7	25999.1	33689.5	35630.5
Total amount of import goods (USD 100 million)	5.8	108.9	2250.9	3962.4	16795.6	20621.0	26917.9	26913.7
PM$_{2.5}$ (μg/m^3)			22	35	52	33	30	29
CO$_2$ emissions (Mt)				9188.6	10374.1	11258.1	11499.7	11969.2
Chinese yuan/USD exchange rate		1.53	8.2785	6.7695	6.2284	6.8974	6.4515	6.7261

Notes: GDP is calculated at current prices, and the growth rate is calculated at constant prices.
Sources: National Bureau of Statistics; General Administration of Customs; China Electricity Council; Ministry of Ecology and Environment.
Note on data sources for 2021 and 2022: Crude oil foreign dependency, data related to energy by the National Development and Reform Commission; CO$_2$ emissions, Energy Institute Statistical Review of World Energy 2023; other data, "Statistical Communique of the National Economic and Social Development".

Table 2 International Comparisons of Key Energy and Economic Indicators Per Capita (2022)

	China	US	EU	Japan	Russia	India	World
Population (millions)	1412.2	333.3	447.3	125.1	144.2	1417.2	7950.9
GDP per capita (USD)	11560	62789	34160	36032	10030	2090	11315
Fossil fuel recoverable reserves per capita							
Coal (t)	147	751**	148**	3**	111**	81**	142**
Oil (t)	2.70	24.27**	1.17**	0.05**	101.37**	0.21**	32.22**
Natural gas (m^3)	4652	38020**	1974**	164**	255814**	970**	24798**
Primary energy consumption per capita (kgce)	3812	9667	4436	4907	6810	876	2581
Electricity production per capita (kWh)	6266	13644	6287	8262	8092	1311	3668
Steel output per capita (kg)	721	242	305	713	496	88	237
Vehicle ownership per thousand people	226	850	640*	639	363	29	209**
CO_2 emissions per capita (t)	8.41	15.90	6.30	8.75	14.10	2.02	4.94

Notes: 1. Per capita GDP in constant 2015 USD;
      2. *Data for 2021, **Data for 2020;
Sources: Population and per capita GDP, WB; Fossil fuel recoverable reserves per capita, *China Mineral Resources Report*; Fossil fuel recoverable reserves per capita, per capita primary energy consumption, electricity generation, and CO_2 emissions in other regions, *Energy Institute Statistical Review of World Energy 2023*; Per capita steel production, WSA; Vehicle ownership per thousand people, WAO.

Table 3 Economic, Energy Consumption, and Living Standards in Urban and Rural Areas of China (2022)

Economy	
GDP per capita (USD)	National average: 12741 Max: Beijing 28295 Min: Gansu 6686
Urban residents' disposable income per capita/Chinese yuan	National average: 49283 Max: Shanghai 84034 Min: Heilongjiang 35042
Rural residents' disposable income per capita/Chinese yuan	National average: 20133 Max: Shanghai 39729 Min: Gansu 12165
Energy Consumption	
Regional	
Energy consumption per capita/kgce	National average: 3832 Max: Inner Mongolia 11209*
Electricity consumption per capita/kWh	National average: 6118 Max: Inner Mongolia 17493
Residential electricity consumption per capita/kWh	National average: 947 Max: Beijing 1468
Urban and rural	
Energy consumption per capita/kgce	National average: 3832 Urban: 5233* Rural: 729*
Electricity consumption per capita/kWh	National average: 6118 Urban: 8662 Rural: 1348
Residential electricity consumption per capita/kWh	National average: 947 Urban: 728* Rural: 1031*
Living Standards	
Urban residents' disposable income per capita/yuan	20% high-income households: 107224 20% low-income households: 16971
Rural residents' disposable income per capita/yuan	20% high-income households: 46075 20% low-income households: 5025
Home computer ownership/100 households	National average: 47.5 Urban: 63.4 Rural: 25.0
Air conditioner ownership/100 households	National average: 133.9 Urban: 163.5 Rural:92.2
Private car ownership/100 households	National average: 43.5 Urban: 51.4 Rural:32.4

Note: *Data for 2021.

Sources: Residential electricity consumption per capita, *China Electricity Industry Annual Development Report*; Other data, *China Statistical Yearbook*.

Table 4 International Comparison of Living Standards of China's Most Affluent Cities (2022)

	Beijing	Shanghai	Shenzhen	Erdos	Tokyo (Japan)
Total population (10,000)	2184	2476	1766	220	1404
Urbanization Rate	87.6	89.3	99.8	78.1	−
GDP per capita (USD)	28322	26821	27248	38196	76144*
Disposable income per capita (USD)	11510	11836	10811	7181	−
Housing area per capita (m²)	286	193	223	384	224

Notes: 1. In 2022, Ordos City had the highest per capita GDP among all prefecture-level cities in China.

2. The data for Tokyo's number of vehicles is as of the end of March 2023, whereas the asterisk indicates data from 2019.

Sources: Data for Chinese cities, *Statistical Communiqué on National Economic and Social Development*; data for Tokyo, the Statistics Bureau, Ministry of Internal Affairs and Communications of Japan.

Table 5 Urban and Rural Living Standards and Energy Consumption

	2000	2010	2015	2019	2020	2021	2022
Per capita GDP (USD)	949	4556	8007	10276	10507	12551	12741
Urban residents' disposable income per capita (Chinese yuan)	6280	19109	31195	42359	43834	47412	49283
Rural residents' net income per capita (Chinese yuan)	2253	5919	11422	16021	17131	18931	20133
Engel's coefficient, urban households (%)	39.4	35.7	29.7	27.6	29.2	28.6	29.5
Engel's coefficient, rural households (%)	49.1	41.1	33.0	30.0	32.7	32.7	33
Housing area per capita (m^2)							
Urban (building area)	20.3	31.6	33.5	39.8	40.9	41.0	−
Rural (living area)	34.6	37.9	43.4	48.9	50.3	50.2	−
Penetration rate of energy-consuming appliances (per 100 households)							
Indoor air conditioners							
Urban	30.8	112.1	114.6	148.3	149.6	161.7	163.5
Rural	1.3	16.0	38.8	71.3	73.8	89	92.2
Refrigerators							
Urban	80.1	96.6	94.0	102.5	103.1	104.2	104.4
Rural	12.3	45.2	82.6	98.6	100.1	103.5	103.9
Color TVs							
Urban	116.6	137.4	122.3	122.8	123.0	120.3	120.6
Rural	48.7	111.8	116.9	117.6	117.8	116.3	116.5
Home computers							
Urban	9.7	71.2	78.5	72.2	72.9	63.2	63.4
Rural	0.5	10.4	25.7	27.5	28.3	24.6	25
Private cars							
Urban	0.5	13.1	30.0	43.2	44.9	50.1	51.4
Rural	−	−	13.3	24.7	26.9	30.2	32.4
Energy consumption per capita (kgce)	1160	2693	3128	3471	3527	3709	3832
Electricity consumption per capita (kWh)							
Urban	2574	4519	6212	7399	7250	8582	8662
Rural	205	989	1496	1719	1763	1352	1348

Note: The per capita GDP is at current prices.
Sources: NBS, CEC.
Note on data sources for 2021 and 2022: Living standards, per capita energy consumption, and electricity consumptions, *the Statistical Communiqué on National Economic and Social Development*; other data, *China Statistical Yearbook*.

Table 6 Remaining Technically Recoverable Reserves of Energy Minerals (2022)

Mineral	Unit	Remaining Technically Recoverable Reserves
Coal	Billion Tons	2070.12
Oil	Billion Tons	38.06
Oil Sands	Billion Tons	1.89
Oil Shale	Billion Tons	21.07
Natural Gas	Billion Cubic Meters	65690.12
Coalbed Methane	Billion Cubic Meters	3659.69
Shale Gas	Billion Cubic Meters	5605.59

Source: *National Mineral Resources Reserve Statistics Table.*

Table 7 Energy Production by Source

Year	Raw coal (Mt)	Crude oil (Mt)	Natural gas (100 million m^3)	Electricity production (TWh)	Share of electricity production from hydropower (TWh)
1990	1080	138.3	153.0	621.2	126.7
1995	1361	150.1	179.5	1007.0	190.6
2000	1384	163.0	272.0	1355.6	222.4
2005	2365	181.4	493.2	2500.3	397.0
2010	3428	202.4	957.9	4207.2	722.2
2015	3747	214.4	1346.1	5810.6	1130.3
2016	3411	199.7	1368.7	6133.2	1184.1
2017	3524	191.5	1480.3	6604.5	1197.9
2018	3683	189.1	1602.7	7166.7	1234.2
2019	3850	191.0	1761.7	7503.4	1304.4
2020	3900	194.8	1925.0	7779.1	1355.2
2021	4126	198.9	2075.8	8534.3	1339.0
2022	4559	204.7	2201.1	8848.7	1352.2

Sources: Raw coal production, *Annual Report on Coal Industry Development*; other data, the NBSs' annual data.

Table 8 Crude Oil Refining Volume and Main Products Output

Unit：Mt	2000	2010	2015	2018	2019	2020	2021	2022
Crude oil refining volume	210.8	426.8	522.0	603.57	651.98	674.41	703.55	675.90
Production of main products								
Gasoline	41.32	76.76	119.99	138.88	141.21	131.72	154.57	145.36
Kerosene	8.78	17.08	35.19	47.70	52.58	40.94	39.44	29.49
Diesel	70.73	158.25	179.99	173.76	166.38	159.05	163.37	191.26
Fuel oil	20.54	25.37	23.84	20.24	24.70	34.06	43.50	50.71

Sources: NBS; CPCIF.
Note on data sources for 2021 and 2022: Crude oil refining volume, NBS - Energy Production; Production of main products, *China Statistical Yearbook*.

Table 9 Top 10 Largest Coal Companies

Unit: Mt	2020	2021	2022
1. National Energy Group	527	570	601
2. China Coal Energy Company	223	247	261
3. Shaanxi Coal and Chemical Industry Group	195	210	233
4. Huaneng Group	76	87	99
5. Lu'an Chemical	87	98	105
6. Shandong Energy	270	255	265
7. Shanxi Coking Coal	156	164	182
8. State Power Investment Corporation	79	77	79
9. Jinneng Holding Group	342	384	413
10. Huaihe Energy Group	74	74	74

Sources: CCIA.
Note on data sources for 2021 and 2022: open data from the respective companies.

Table 10 Top 10 Oil Fields for Crude Oil Production

Unti: Mt	2020	2021	2022
1. PetroChina Changqing Oilfield	60.00	62.44	65.01
2. PetroChina Daqing Oilfield	43.03	43.22	34.38
3. CNOOC Bohai Oilfield	30.64	33.00	34.52
4. PetroChina Tarim Oilfield	30.03	31.82	33.10
5. PetroChina Southwest Oil & Gasfield	25.34	28.28	30.00
6. Sinopec Shengli Oilfield	23.85	23.90	24.04
7. CNOOC Eastern South China Sea Oilfield	16.12	17.78	20.00
8. PetroChina Xinjiang Oilfield	15.59	16.47	17.48
9. Yanchang Petroleum Group	11.20	11.37	17.65
10. CNOOC Western South China Sea Oilfield	11.00	11.20	12.12

Sources: CPEA.
Note on data sources for 2021 and 2022: open data from the respective groups.

Table 11 Installed Electricity Capacity and Electricity Generation

	1990	2000	2010	2015	2019	2020	2021	2022
Installed electricity capacity by year-end/GW	137.89	319.32	966.41	1508.28	2010.7	2200.6	2376.9	2564.0
Hydropower	36.05	79.35	216.06	319.37	358.0	370.2	390.9	413.5
Thermal power	101.84	237.54	709.67	990.21	1189.6	1245.2	1296.8	1332.4
Nuclear power	−	2.10	10.82	26.08	48.7	49.9	53.3	55.5
Wind power	−	0.35	29.58	130.75	209.2	281.5	328.5	365.4
Electricity generation/TWh	621.32	1386.5	4207.2	5814.57	7503.4	7779.1	8534.2	8848.7
Hydropower	126.35	243.1	722.2	1130.27	1304.4	1355.2	1339.0	1352.2
Thermal power	494.97	1107.9	3331.9	4284.19	5220.2	5300.3	5805.9	5888.8
Nuclear power	−	16.7	73.9	170.79	348.4	366.2	407.5	417.8
Wind power	−	−	72.2	251.2	405.3	466.5	567.7	762.7

Note: In 2022, coal-fired power accounted for 57.4% of total electricity generation.
Sources: NBS, NEA.
Note on data sources for 2021 and 2022: Installed capacity, *National Power Industry Statistics*; electricity generation, *Statistical Communiqué on National Economic and Social Development*.

Table 12 Installed capacity and power generation of China's five largest power generation groups (2022)

	National Energy Group	Huaneng Group	Datang Group	Huadian Group	China Power Investment Corp
Installed capacity (GW)	28796	22111	17015	19035	21171
Clean energy ratio (%)	30.90	41.62	37.06	35.91	65.87
Power generation (TWh)	1113.9	791.1	588.5	642.1	663.9
Net coal consumption (gce/kWh)	303.3	291.1	293.2	290.4	298.5

Note: The net coal consumption is based on data from the year 2020.
Sources: open data from the respective groups.

Table 13 Key Indicators for the Power Industry

	2000	2005	2010	2018	2019	2020	2021	2022
Net coal consumption rate (gce/kWh)	392	370	333	308	306	305	302	301
Gross coal consumption rate (gce/kWh)	363	345	312	290	288	291	289	286
Power consumption rate of thermal power plants (%)	7.31	6.80	6.33	5.95	6.03	4.65	4.36	4.84
Line loss rate (%)	7.70	7.21	6.53	6.27	5.93	5.60	5.26	4.84
Utilization hours for power generating equipment	4517	5425	4650	3879	3825	3756	3817	3687
Hydropower	3258	3664	3404	3607	3697	3825	3622	3412
Thermal power	4848	5865	5031	4378	4307	4211	4448	4379

Note: 1. The data only includes power plants with a capacity of 6000 kilowatts or higher.

2. Gross coal consumption rate is calculated using the corresponding net coal consumption rate and power consumption rate of thermal power plants. Gross coal consumption rate = Net coal consumption rate × (1 - Power consumption rate of thermal power plants).
Sources: CEC.

Note on data sources for 2021 and 2022: power consumption rate of thermal power plants, *China Power Industry Annual Development Report*; other indicators, *National Power Industry Statistics*.

Table 14 Development and Utilization of Renewable Energy in China

		2000	2005	2010	2017	2018	2019	2020	2021	2022
Hydropower	GW	79.4	117.4	213.4	341.2	352	358	370.2	390.94	414.06
	TWh	243.1	397.0	722.2	1194.5	1232.9	1304.4	1355.2	1339	1202
	Mtce	88.2	136.2	225.3	348.8	357.5	377	388.9	381.3	342.3
Of which: small-scale hydropower	GW	24.8	38.5	59.0	79.3	80.4	81.4	81.3	82.9	80.63
	TWh	80.0	120.9	202.3	247.7	234.6	253.3	242.4	224.1	236
	Mtce	29.0	41.5	63.1	72.3	68	73.2	69.6	63.8	67.2
Solar energy	Mtce	3.1	9.6	22.6	85.5	109.3	121.4	131.8	166.5	195.4
Photovoltaic power generation	MW	18	7	1220	130250	174450	204680	253430	306540	392680
	TWh	0.02	0.07	1.29	96.7	177.5	224.3	261.1	323.8	425.1
	Mtce	0.01	0.03	0.40	28.2	51.5	64.8	74.9	92.2	121.1
Wind power generation	GW	0.34	1.22	44.78	163.7	184.3	209.1	281.5	328.71	365.64
	TWh	0.5	2.0	72.2	269.5	325.3	357.7	414.6	656.1	762.4
	Mtce	0.2	0.7	22.5	85.8	96.6	103.4	119	163.2	189.7
Biomass and waste power generation	GW	0.8	2.0	6.7	27.4	30.3	32.5	29.6	38.07	41.32
	TWh	3.5	8.7	29.0	79.5	90.7	111.1	132.6	165.8	182.4
	Mtce	1.3	3.0	9.0	23.2	26.4	32.1	38.1	41.3	45.4
Total	Mtce	92.8	149.5	279.4	495.2	521.4	543.3	589.8	633.9	677.8

Notes: 1. Small hydropower refers to hydroelectric power stations with an installed capacity of less than 50MW.

2. Renewable energy power generation was converted to standard coal equivalent using coal consumed in thermal power generation for the same year, the gross coal consumption rate (gce/kWh) in 2000, 2005, 2010, 2017, 2018, 2019, 2020, 2021, and 2022 were 363, 345, 312, 290, 290, 288, 291, 289, and 286, respectively.

Sources: NBS; China Energy Statistical Yearbook 2019; NDRC; NEA; MWR; MOA; MOHURD; MNR; CEC; CSES; CAREI; China Resource Comprehensive Utilization Association; CWEA; National Geothermal Energy Center; BERC.

Note on data sources for 2021 and 2022: Installed capacity, *China Statistical Yearbook*; power generation, *China Energy Statistical Yearbook*; small-scale hydropower generation, "*National Water Resources Development Statistical Bulletin*"; biomass and waste power generation, *China Power Industry Annual Development Report*.

Table 15 Primary Energy Consumption and Structure

Year	Total energy consumption (10,000 tce)	Share (total energy consumption =100)			
		Coal	Oil	Natural gas	Hydro, nuclear and wind power
2005	261369	72.4	17.8	2.4	7.4
2006	286467	72.4	17.5	2.7	7.4
2007	311442	72.5	17.0	3.0	7.5
2008	320611	71.5	16.7	3.4	8.4
2009	336126	71.6	16.4	3.5	8.5
2010	360648	69.2	17.4	4.0	9.4
2011	387043	70.2	16.8	4.6	8.4
2012	402138	68.5	17.0	4.8	9.7
2013	416913	67.4	17.1	5.3	10.2
2014	425806	65.6	17.4	5.7	11.3
2015	429905	63.7	18.3	5.9	12.1
2016	435819	62.0	18.5	6.2	13.3
2017	449000	60.4	18.8	7.2	13.6
2018	464000	59.0	18.9	7.8	14.3
2019	486000	57.7	19.6	8.3	14.4
2020	498314	56.9	18.8	8.4	15.9
2021	524000	56.0	18.5	8.9	16.6
2022	541000	56.2	17.9	8.5	17.4

Source: *China Statistical Yearbook*.

Table 16 Final Energy Consumption and Structure by Sector

	2019		2020		2021	
	Mtce	%	Mtce	%	Mtce	%
Agriculture	44.1	1.3	44.9	1.3	49.9	1.3
Industry	2325.0	66.4	2414.3	67.5	2506.8	67.1
Transportation	488.3	13.9	458.6	12.8	493.0	13.2
Buildings	645.7	18.4	661.3	18.5	686.8	18.4
Total	3503.1	100	3579.1	100	3736.4	100

Source: calculated from the energy balance tables provided by the *China Statistical Yearbook* based on iGDP's methodology.

Table 17 Oil Products Consumption by Source

Unit: Mt	2000	2010	2015	2017	2018	2019	2020	2021
Gasoline	35.05	68.86	115.99	124.16	130.55	136.28	127.67	142.42
Diesel	67.74	146.34	174.07	169.97	164.10	149.18	142.83	151.97
Kerosene	8.70	17.44	27.90	33.26	36.54	39.50	33.52	34.90
Fuel oil	38.73	37.58	28.20	48.87	45.36	46.90	53.65	54.89

Source: *China Statistical Yearbook*.

Table 18 Natural Gas Consumption and Structure

	2015		2018		2019		2020		2021	
	Mtce	%	Mtce	%	Mtce	%	Mtce	%	Mtce	%
Agriculture	0.9	0	1.3	0	1.2	0	1.3	0	1.7	0
Industry	1234.5	63.9	1940.1	68.9	2092.1	68.4	2304	69.0	2678.2	71.0
Transportation	2.2	0.1	2.5	0.1	2.8	0.1	2.6	0.1	3.2	0.1
Buildings	237.6	12.3	286.2	10.2	341.5	11.2	354.3	10.6	366.3	9.7
Wholesale and Retail Trade and Accommodation and Food Services	51.3	2.7	60.8	2.2	62.5	2.0	62.1	1.9	70.2	1.9
Other	45.4	2.4	57.9	2.1	57.3	1.9	55.6	1.7	61	1.6
Residential Living	359.8	18.6	468.4	16.6	502.3	16.4	560	16.8	592.3	15.7
Total	1931.8	100	2817.1	100	3059.7	100	3339.9	100	3773	100

Source: *China Energy Statistical Yearbook*.

Table 19 Electricity Consumption Per Capita

Year	National (kWh)	Urban (kWh)	Rural (kWh)
1978	218	1072	32
2010	2752	4519	989
2015	4142	6212	1496
2018	4905	7108	1659
2019	5157	7399	1719
2020	5320	7250	1762
2021	6031	8582	1352
2022	6118	8662	1348

Source: *China Statistical Yearbook*.

Table 20 Energy Consumption and Production of the Manufacturing Industry

	Energy Consumption Per Unit of Product						2022 Production
	Unit	2010	2015	2018	2019	2020	
Steel	kgce/t	950	899	861	850	847	1018.0 Mt
Electrolytic aluminum	kWh/t	13979	13562	13555	13257	13244	40.1 Mt
Copper smelting	kgce/t	500	372	342	335	317	11.1 Mt
Cement	kgce/t	143	137	132	131	128	2129.3 Mt
Building ceramics	kgce/m^2	7.7	7.0	6.7	6.6	6.5	7.31 billion m^2
Wall materials	kgce/10,000 block standard bricks	468	444	425	421	417	–
Building Lime	kgce/t	160	145	139	137	135	310 Mt
Sheet glass	kgce/weight case	16.9	14.7	14.0	12.5	11.5	10.2 billion weight cases
Oil refining	kgce/t	100	96	96	92	91	67.6 Mt (process load)
Ethylene	kgce/t	950	854	840	839	837	29.0 Mt
Synthetic ammonia	kgce/t	1587	1495	1453	1418	1422	53.2 Mt
Caustic soda	kgce/t	1006	897	871	861	850	39.8 Mt
Sodium carbonate	kgce/t	385	339	331	328	326	29.2 Mt
Calcium carbide	kWh/t	3340	3303	3208	3141	3253	28.5 Mt
Paper and paperboard	kgce/t	390	339	318	312	307	136.9 Mt

Notes: 1. The energy consumption is converted into coal equivalent according to the gross coal consumption rate.
2. The energy consumption represents the average across the entire industry.
Data sources for energy consumption: NDRC; MIIT; China Iron and Steel Association; China Nonferrous Metals Industry Association; CEC; CBMF; China Petroleum and Chemical Industry Federation; China Chemical Energy Conservation Technology Association; China Ceramics Industry Association; China Carbide Industry Association; China Paper Making Association.
Data source for 2022 production: *China Statistical Yearbook*.

Table 21 Energy Consumption of Transport

	2005	2010	2014	2015	2018	2019	2020
Highways							
Gasoline (Mt)	46.08	67.5	101.7	112.0	122.9	128.6	117.9
Diesel (Mt)	54.60	77.9	108.0	105.3	107.6	111.7	110.8
Railways							
Diesel (Mt)	5.61	6.72	6.58	6.25	8.16	8.22	8.54
Electricity (100 million kWh)	198.1	307.0	478.0	507.7	603.0	607.0	691.0
Waterways							
Diesel and Fuel oil (Mt)	14.83	22.45	27.49	26.19	27.3	28.7	31.3
Civil aviation							
Kerosene (Mt)	9.52	16.01	23.4	25.6	37.41	36.84	32.92

Note: Fuel oil is used for water transport vessels. Diesel fuel is used for ships entering and leaving ports, entering and leaving narrow waterways, and in windy and rough weather. It is an independent system. 2020 annual consumption of 3Mt.

Sources: NBS; NDRC; National Railway Administration; State Railway Administration; MOT; The National Civil Aviation Authority; Chinese Automotive Technology Research Center; CNPC Economics & Technology Research Institute.

Table 22 Agricultural and Rural Energy Indicators (2022)

	2000	2010	2015	2020	2021	2022
Total power of agricultural machinery (10,000 kW)	52574	92786	111728	105622	107764	110597
Effective irrigation area (10,000 ha)	5382	6035	6587	6916	6962	7040
Water-saving irrigation area (10,000 ha)	1639	2731	3106	3780	3968	4129
Chemical fertilizers application (10,000 t)	4145	5562	6023	5251	5191	5079
Installed capacity of small rural hydropower plants (10,000 kW)	699	5924	7588	8134	8290	8063
Rural electricity consumption (100 million kWh)	2421	6632	9027	9717	6736	6619

Source: NBS.

Note on data sources for 2021 and 2022: Installed capacity of small rural hydropower plants, *National Water Resources Development Statistical Bulletin*; rural electricity consumption, *China Statistical Yearbook*; other data, *Statistical Communiqué on National Economic and Social Development*.

Table 23 Electricity Consumption of Household Electric Appliances (2022)

	Ownership (units per 100 households)			Electricity consumption (TWh)
	Whole society	Urban	Rural	Residential
Washing machines	99.0	100.6	96.8	19.6
Refrigerators	104.2	104.4	103.9	150.3
Microwave ovens	42.2	56.0	22.8	9.4
Color TVs	118.9	120.6	116.5	74.0
Air conditioners	133.9	163.5	92.2	357.3
Water heaters	89.9	98.2	78.1	211.0
Kitchen ventilators	64.6	83.2	38.5	38.6
Total				860.2

Source: *China Statistical Yearbook.*

Table 24 Energy Saving (2020)

Unit: Mtce	Energy saving in 2020 compared with 2019	Share %
Technical energy saving	30.76	78.4
Manufacturing Industry	26.29	33.5
Transportation	-12.53	-16.0
Construction	17.00	21.7
Structural energy saving	9.54	21.6
Total energy saving	40.3	100.0

Source: Wang Qingyi, *Energy Data 2021*.

Table 25 Energy Saving in Transportation (2022)

	Unit workload energy consumption (kgce/10,000 conversion t-km)				Workload in 2022 (billion converted t-km)	Energy-saving amount (10,000 tce) in 2022 compared with 2021
	2019	2020	2021	2022		
Highways	474.0	485.0	–	–	6895.8	–
Railways	39.4	42.3	40.8	39.1	4252.3	74
Waterways	39.2	40.3	–	–	12100.3	–
Civil aviation	4193.0	4649.0	4542.3	4498.2	59.9	1196

Note: Unit workload energy consumption of highways and waterways only considered freights.
Sources: NBS; State Railway Administration; MOT; CEC; China Association of Automobile Manufacturers; China Automotive Technology Research Center; CNPC Economics & Technology Research Institute; *Statistical Bulletin of Transportation Industry Development in 2020*; *Statistical Bulletin of China Civil Aviation in 2020*; *2020 Railway Statistics Bulletin*.

Table 26 Energy Consumption and Carbon Emissions by Stage in Buildings

	2018	2019	2020	2021
Total Energy Consumption in Building Process (10^8 tce)	21.5	22.3	22.7	19.1
Proportion of Total Energy Consumption in Building Process to National Energy Consumption	46.5%	45.9%	45.5%	36.3%
Building Material Production	11.0%	11.1%	11.1%	–
Building Construction	0.5%	0.9%	0.9%	–
Building Operation	10.0%	10.3%	10.6%	11.4%
Total Carbon Emissions in Building Process (10^8 tons)	49.3	50.0	50.8	40.7
Proportion of Total Carbon Emissions in Building Process to National Carbon Emissions	51.3%	50.6%	50.9%	38.2%
Building Material Production	27.2%	27.7%	28.2%	17.0%
Building Construction	1.0%	1.0%	1.0%	0.7%
Building Operation	21.1%	21.3%	21.6%	23.0%

Note: In 2021, the national energy consumption during the building operation stage increased by 75 million tce compared to 2020, an increase of 6.96%. The growth of carbon emissions recovered to pre-COVID 19 levels.
Sources: China Association of Building Energy Efficiency, *Series of Research Reports on Carbon Emissions in the Urban and Rural Construction Sector in China*.

Table 27 Physical Energy Efficiency

Unit: %	2000	2005	2010	2015	2017	2019
1.Mining efficiency	33.0	33.3	35.9	36.2	36.3	36.6
2. Intermediate efficiency	68.5	70.8	70.9	67.5	70.0	70.3
3. End-use efficiency						
Agriculture	32.0	33.0	34.0	36.5	36.6	36.9
Industry	46.0	47.3	50.5	54.0	54.8	56.5
Transportation	28.9	29.2	29.1	33.3	34.5	35.0
Residential and commercial	66.0	68.4	74.2	74.5	74.8	75.8
Total	46.7	48.3	51.0	54.8	55.2	55.6
4. Energy efficiency (2×3)	32.0	34.2	36.0	37.0	39.0	39.1
5. Overall efficiency of energy system (1×4)	10.6	11.4	12.9	13.4	14.1	14.3

Notes: 1. This table was calculated according to internationally accepted definitions of energy balance and calculation methods.
2. Intermediate refers to energy processing, conversion, storage, and transportation.

Table 28 Energy Consumption of Energy Intensive Products

	2000	2010	2015	2018	2019	2020	2021
Coal Consumption for Thermal Power Generation/gce/kWh	363	312	298	290	289	287	281
Coal Consumption for Electricity Supply by Thermal Power Plants/gce/kWh	392	333	315	308	306	305	303
Comparable Energy Consumption for Steel/kgce/t	784	681	644	613	605	603	598
AC power consumption for electrolytic aluminum (kWh/t)	15418	13979	13562	13555	13257	13244	12966
Comprehensive energy consumption for cement (kgce/t)	172	143	137	132	131	128	127
Comprehensive energy consumption for ethylene (kgce/t)	1125	950	854	841	839	837	837
Comprehensive energy consumption for synthetic ammonia (kgce/t)	1699	1587	1495	1453	1418	1422	1442
Comprehensive energy consumption for paper and paperboard (kgce/t)							
Pulp Producing Enterprises	1540	1200	1045	981	962	947	939

Source: *China Energy Statistical Yearbook.*

Table 29 Industrial Sector Capacity Elimination

	Production capacity elimination						2020 Production
	2006~2010	2015	2016	2017	2018	2020	
Coal/Mt	450.0	90	290	150	150	150	3902
Charcoal/Mt	10.38	19.35	40	16.8	19.2	67	471.1
Thermal power/GW	72.1	4.23	4	5.0	12.9	7.3	1254.2
Steel/Mt	68.6	17.1	65	50	30	30	1064.8
Electrolytic aluminum/Mt	0.80	0.34	0.88	2.4	2.72	0.44	37.1
Cement/Mt	403	39	0.11	50	84	29	2395
Sheet glass/million weight cases	1.52	0.11	0.33	2.3	1.2	4.0	9.52
Calcium carbide/Mt	4.0	2.0	2.52	3.5	3.7	1.3	27.58
Paper and paperboard/Mt	10.3	5.90	10.0	3.0	1.6	30	127.0

Note: In 2020, the paper industry suffers the most serious crisis in its history, with nearly 30% of paper mills failing to open.
Sources: NBS; MIIT; CEC; CISA; CBMF; China Cement Association; China Ceramics Industrial Association; CPCIF; China Chemical Energy Conservation Technology Association; China Paper-making Association.

Table 30 Energy Import and Export in China

	2000	2005	2010	2018	2019	2020	2021	2022
Crude oil (Mt)								
Exports	10.4	8.1	3.0	2.6	0.9	1.6	2.6	2.1
Imports	70.3	127.1	239.3	461.9	505.7	542.4	512.9	508.2
Petroleum products (Mt)								
Exports	31.4	29.7	40.3	34.0	34.8	53.8	53.0	48.7
Imports			164.7	1250.0	1323.0	1393.0	1680.0	1503.0
Natural gas (10^8 m^3)								
Exports	58.8	71.7	19.0	4.9	6.0	3.2	2.6	4.0
Imports	2.0	26.2	164.8	281.2	299.7	303.6	323.3	293.2
Coal (Mt)								
Exports	99	112	191	209	217	218	202	201
Imports	15	50	56	57	49	48	59	71

Note: 1. Coal imports and exports include lignite.

2. In 2022, imports of coal from Indonesia, Russia, and Mongolia accounted for 58.2%, 23.2%, and 10.6% respectively.

3. In 2022, natural gas imports totaled 150.3 billion m^3, of which 62.7 billion m^3 were via pipelines and 87.6 billion m^3 were LNG.

Source: General Administration of Customs of the People's Republic of China - Customs statistics

Table 31 Energy Prices in China

	Unit	2017	2018	2019	2020	2022
5500 kcal/kg thermal coal	yuan/t	536	528.6	556	565	722
No.92 gasoline retail price	yuan/L	6.37	6.42	6.78	6.90	7.83
Civil natural gas	yuan/m^3	1.34	1.62	1.80	2.08	2.50
Electricity for residents	yuan/kWh	0.53	0.56	0.57	0.51	0.64

Source: Price Monitoring Center of the NDRC.

Table 32 R&D Expenditure for Companies in the Energy and Energy-Intensive Industry in China

Unit: 100 million Chinese yuan	2010	2015	2018	2019	2020	2021	2022
Industry total	4015.4	10013.9	12459.8	13971.1	15271.3	17514.2	19361.8
Coal mining and washing	108.7	143.3	146.5	109.2	120.1	143.3	182.6
Petroleum and natural gas exploitation	88.1	62.5	89.3	93.8	80.1	92.9	121.8
Petroleum processing, coking and nuclear fuel processing	43.8	100.8	145.4	184.7	189.6	188.3	170.6
Production and supply of electric power and heating	31.9	81.4	96.9	113	151.8	152.8	153.8
Steel	402.1	561.2	706.9	886.3	799.3	906.7	816.4
Non-ferrous metals	118.9	371.5	442.5	479.8	418.8	475.3	505.1
Building materials	81.3	277.6	415.9	520.1	513.1	552.6	628.7
Chemical industry	247.5	794.4	899.9	923.4	797.2	857.1	1004.9
Chemical fibers	41.0	78.5	112.1	123.7	132.4	169.3	171
Food, beverages and tobacco	98.8	246.2	298.4	294.2	275	247.1	258.3
Textile and apparel	101.2	297.8	358.4	371.5	337.2	346.1	364.1
Paper and paper products	36.7	107.6	167.8	152.7	136.6	136.1	138.4
Transportation equipment	582.2	1340.1	1712.9	1718.7	1848.6	2034.8	2284.9
Electrical machinery and apparatus	425.1	1012.7	1320.1	1406.2	1567.1	1818.1	2098.5
Communications equipment, computers, and other electronic equipment manufacture	686.3	1611.7	2279.9	2448.1	2915.2	3577.8	4099.9
General and special machinery manufacture	472.2	1199.7	1461.4	1599.6	1943.9	2154.5	2340.7

Note: Data from 2010 is for medium and large enterprises, while data from 2011 to 2021 is for enterprises above a designated size.
Source: *National Statistics Bulletin on Science and Technology Expenditures*.

Table 33 Clean Coal Production and Efficient Use

	2012	2015	2019	2020	2021	2022
Raw Coal Washing Rate	56.0%	65.9%	73.2%	74.1%	71.7%	69.7%
Comprehensive Utilization Rate of Mine Water	62.0%	69.9%	75.8%	78.7%	79.0%	79.3%
Comprehensive Utilization Rate of Coal Gangue	–	64.2%	71.0%	72.2%	72.4%	73.2%
Land Reclamation Rate	42.0%	47.0%	52.0%	57.0%	57.5%	57.8%
Installed Capacity for Power Generation from Coal Gangue and Low-Calorific Value Coal (10,000 kW)	2950	3300	4100	4200	4300	4300
Comprehensive Energy Consumption of Raw Coal Production by Large Coal Enterprises (kgce/t)	17.1	11.2	10.9	10.5	10.4	9.7
Electricity Consumption of Raw Coal Production by Large Coal Enterprises (kWh/t)	28.4	–	20.8	20.2	20.7	22.0

Source: *Annual Report on Coal Industry Development*.

Table 34 Comparison of Main Indicators of Coal Industry between China and the US (2022)

	China	US
Raw coal production (Mt)	4560	539
Coal exports (Mt)	4	78.02
Coal imports (Mt)	293.2	5.73
Coal consumption (Mt)	3040	468
Percentage of coal used in power generation (%)	58.4	91.7
Percentage of production in surface mines (%)	23.18	62
Sales price of thermal coal (USD/t)	107	38
Coal mines in operation	4400	548
Coal industry employees (10,000 people)	253	4.36
Raw coal production efficiency (ton per capita each year)	1800	12367
Coal miners average wage (USD/year)	15197	81000
Death number of mine accidents	245	29
Death rate of mine accidents (person/Mt)	0.054	0.054

Note: 1. The exchange rate for the US dollar is based on the 2022 average: 6.7328.

2. The sales price of thermal coal is the 2022 average value. China: medium and long-term contracts for thermal coal (5500 Kcal/kg). The US: both spot and medium to long-term contract prices.

Sources:

China: Raw coal production and coal consumption, *Statistical Communiqué on the National Economic and Social Development*. Coal imports and exports and average sales price of thermal coal, *China Coal Industry Economic Operation Report*. Percentage of coal used in power generation, *China Electricity Industry Economic Operation Report*. Percentage of production in surface mines, *Guidance on High-Quality Development of Surface Coal Mines*". Coal miners average wage, Table 2—*Annual Average Wage of Employees in Enterprises Above Designated Size in the Mining Industry*. Other indicators, *Annual Report on Coal Industry Development*.

The US: Coal miners average wage, National Mining Association. Other indicators, *EIA Annual Coal Report 2022*.

Table 35 Emissions of Major Pollutants in China

Year	PM$_{2.5}$ (ug/m^3)	SO$_2$ (Mt)	NO$_x$ (Mt)	Chemical oxygen demand (COD) (Mt)
2015	50	18.59	18.51	22.24
2016	47	11.03	13.94	10.46
2017	43	6.96	17.85	21.44
2018	39	5.16	12.88	5.84
2019	36	4.57	12.34	5.67
2020	33	3.18	11.82	25.65
2021	30	2.75	9.73	25.31
2022	29	2.44	9.01	25.78

Sources: PM$_{2.5}$, *China Ecological Environment Status Bulletin*; other indicators, *China Statistical Yearbook*.

Table 36 CO$_2$ Emissions in China and the World

	Total emissions /Mt-CO$_2$						2022 Emissions per capita /t-CO$_2$
	2010	2015	2019	2020	2021	2022	
China	8121.7	9171.3	9933.7	10130.9	10563.5	10550.2	8.41
United States	5485.7	5137.5	4981.6	4462.7	4768.4	4825.8	15.90
India	1640.0	2109.8	2407.3	2237.5	2464.7	2595.8	2.02
Russia	1492.4	1520.8	1559.2	1459.8	1584.2	1457.5	14.10
Japan	1195.9	1209.1	1120.6	1031.8	1066.6	1065.7	8.74
Germany	783.2	755.6	680.1	605.5	642.8	634.9	7.76
South Korea	586.9	622.8	635.3	588.1	603.0	592.4	11.97
Iran	504.4	547.2	626.7	653.0	656.2	667.4	10.22
Saudi Arabia	461.3	601.8	577.4	558.0	571.7	612.5	19.89
Canada	545.6	564.3	558.8	500.1	510.2	519.7	15.19
EU	3389.3	3046.0	2930.7	2569.0	2742.8	2725.4	6.30
World	31032.9	32773.7	34044.0	32284.9	34052.2	34374.1	4.94

Notes: The carbon emissions above reflect only those through consumption of oil, gas, and coal for combustion related activities.
Sources: NBS; CCIA; *BP Statistical Review of World Energy*, June 2021.
Note on data sources for 2021 and 2022: CO$_2$ emissions, *Energy Institute Statistical Review of World Energy*, 2023; populations, WB.

Special Topic: World Leaders in the Energy Field

1. Country with the largest recoverable coal reserves as of the end of 2022:

    China, 207 billion tons.

2. Country with the largest shale gas reserves in 2022:

    China, 560.6 billion m^3.

3. Country with the largest total primary energy production in 2022:

    China, 4.66 billion tce.

4. Country with the largest crude oil production in 2022:

    The US, 895 Mt.

5. Country with the largest coal production in 2022:

    China, 4559 Mt, accounting for 51.8% of the world's total production.

6. Country with the largest coke production in 2022:

    China, 473 Mt, more than 60% of the world's total production.

7. Country with the largest natural gas production in 2022:

    The US, 11.23 trillion m^3, about 20% of the world's total production.

8. Country with the largest electricity generation in 2022:

    China, 8848.7 TWh, accounting for 29% of the world's total production.

9. Country with the largest hydropower generation in 2022:

    China, 1352.2 TWh.

10. Country with the most ultra-supercritical units in 2022:

    China, 170 ultra-supercritical units (million kW) in operation.

11. Country with the largest nuclear power installed capacity in 2022:

    The US, 92 reactors in operation, with a total installed capacity of 94.718 GW.

12. Country with the highest percentage of nuclear power in electricity generation in 2022:

    France, 62.5%.

13. Country with the largest wind power installed capacity in 2022:

    China, 365.4 GW.

14. Country with the largest photovoltaic cell production in 2022:

    China produced polysilicon, silicon wafers, solar cells, and modules totaling 827,000 tons, 357 GW, 318 GW, and 288.7 GW respectively.

15. Country with the largest solar power generation in 2022:

    China, 392.6 TWh.

16. The largest nuclear power plant as of 2022:

    Japan, Kashiwazaki-Kariwa Nuclear Power Plant, 7965 MW in 2022. Affected by the magnitude 9

earthquake on March 11, 2011, six units of the first nuclear power plant were scrapped, and the four units of the second nuclear power plant have been shut down ever since.

17. Country with the largest primary energy consumption in 2022:

China, 5.41 billion tce, 26.2% of the world's total.

18. Country with the largest natural gas consumption in 2022:

The US, 915 billion m^3, 20% of the world's total.

19. Country with the longest high-speed railway network in 2022:

China, 42,000 km, approximately 60% of the world's total.

20. Country with the most electric vehicles in 2022:

China, 13.1 million vehicles. The US, 2.33 million.

21. The busiest airport in 2022:

United States, Atlanta International Airport, with 93.7 million passengers in 2022.

22. The largest oil importer in 2022:

China imported 508 Mt of crude oil, with an external dependency of 71.2%.

23. Country with the most coal mine accident fatalities in 2022:

China, 245 fatalities due to coal mine accidents.

24. Country with the largest CO_2 emissions in 2022:

China emitted 11.88 billion tons of CO_2.