



China Country Analysis Brief

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Overview

Table 1. China energy indicators, 2021

	Coal	Natural gas	Petroleum and other liquids	Nuclear	Renewables
Primary energy production (quads)	94.0	7.5	8.6	4.2	20.7
Primary energy production (percentage)	70%	6%	6%	3%	15%
Primary energy consumption (quads)	96.2	13.4	30.9	4.2	20.5
Primary energy consumption (percentage)	58%	8%	19%	3%	12%
Generation (billion kWh)	5105.6	245.3	12.0	407.5	2474.9
Generation (percentage)	63%	3%	<1%	5%	29%

Data source: U.S. Energy Information Administration, *International Energy Statistics*, and estimates

Note: Generation does not include biomass and waste. Total may not equal 100% due to independent rounding. Quads=quadrillion British thermal units; kWh=kilowatthours.

- China was the most populous country in 2022. However, with a declining population for the first time since 1961, India's population surpassed China's in 2023, according to United Nations estimates.¹ China's GDP growth slowed to 3% in 2022², in part, due to COVID-19 lockdowns that slowed economic activity and affected energy demand. In 2023, even though COVID-19 restrictions have been lifted, weaker retail sales, industrial output, and investments combined with a declining housing market has reduced the likelihood that China will reach its 5% growth target without government action. In August, Barclays reduced its forecast for China's 2023 GDP growth to 4.5%.³
- In 2021, China was the top energy producer and consumer in the world, primary energy production grew by more than 6%, and energy production across sources grew. The fastest-growing energy sources year-over-year were nuclear (11%), renewables (9%), and natural gas (8%). Energy consumption grew by almost 6%; natural gas (12%), nuclear (11%), and renewables (8%) grew the most.⁴
- In 2022, non-fossil fuels accounted for 49% of total installed electricity generation capacity, most of which came from hydroelectric (16%), solar (15%), and wind (14%).⁵
- Higher crude oil and condensate production in 2022 pushed total petroleum and other liquids production to a record high, at 5.1 million barrels per day.⁶
- China's liquefied natural gas (LNG) imports decreased by 20% in 2022, moving China down a spot to the second-highest global LNG importer, behind Japan.⁷

Petroleum and Other Liquids

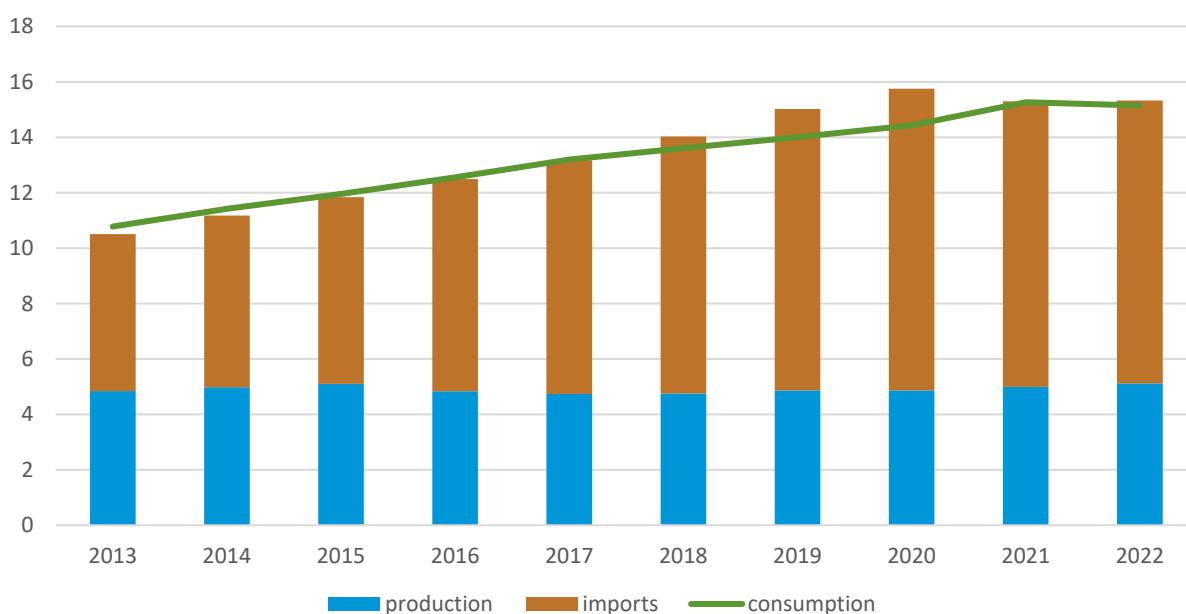
- China was the fifth-highest petroleum and other liquids producer in the world in 2022. Increases in capital expenditures by China's national oil companies (CNOOC, Sinopec, and PetroChina), prompted by the government increasing the importance of energy security, aided in a production increase of 130,000 barrels per day (b/d) in 2022 (Figure 1). Crude oil and condensate made up 80% of total liquids production in 2022.⁸
- Sinopec's capital expenditures for 2023 (\$23 billion) were 12% lower than in 2022. Sinopec's domestic crude oil production target is 688,000 b/d, and its total crude oil production (domestic

and overseas) target is 768,000 b/d for 2023. The total production target is relatively flat (-0.02%) compared with 2022.⁹

- CNOOC's planned capital expenditures for 2023 are approximately \$14.3 billion, a slight increase (1%) from the previous year. CNOOC's production target is 1.8 million barrels of oil equivalent per day (BOE/d) in 2023, which accounts for 70% of total domestic production. Net production targets increase to approximately 1.9 million BOE/d in 2024 and 2.0 million BOE/d in 2025. CNOOC has four projects scheduled to come online in 2023, which they expect to have a total peak production of 48,500 b/d.¹⁰
- PetroChina's capital expenditures decreased 11% to \$33 billion in 2023. PetroChina's crude oil production target is 2.5 million b/d, which is a slight increase (<1%) from 2022. However, the company is trying to raise refining throughput 7% from 2021 to 3.5 million b/d.¹¹

Figure 1. China's petroleum and other liquids production, consumption, and imports, 2013–2022

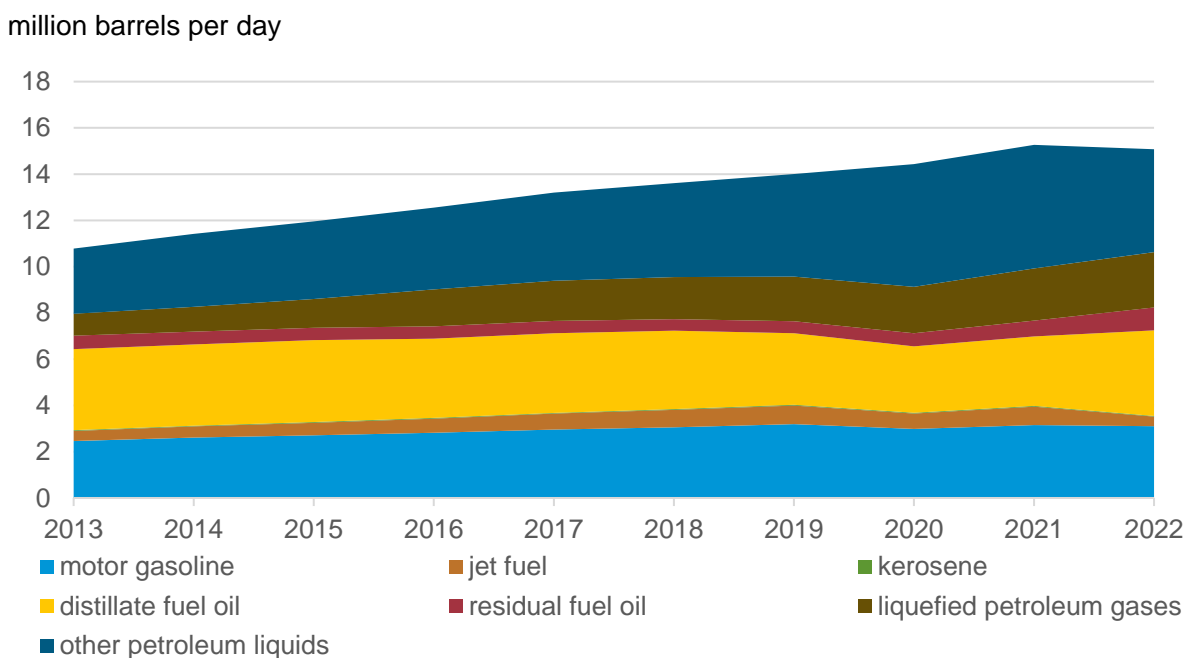
million barrels per day



Data source: U.S. Energy Information Administration, *International Energy Statistics*, *Short-Term Energy Outlook*, and *Global Trade Tracker*

- China was the second-highest consumer of petroleum and other liquids in the world in 2022. China's petroleum and other liquids consumption fell by 120,000 b/d in 2022—the first decrease in demand since 1997. In 2022, China's consumption decreases were mainly driven by decreased demand in jet fuel (48%) and kerosene (9%). However, since COVID-19 restrictions were lifted in early 2023, demand has increased, and we expect it to continue to increase through 2024.¹²

Figure 2. China's refined petroleum products consumption, 2013–2022



Data source: U.S. Energy Information Administration, *International Energy Statistics*

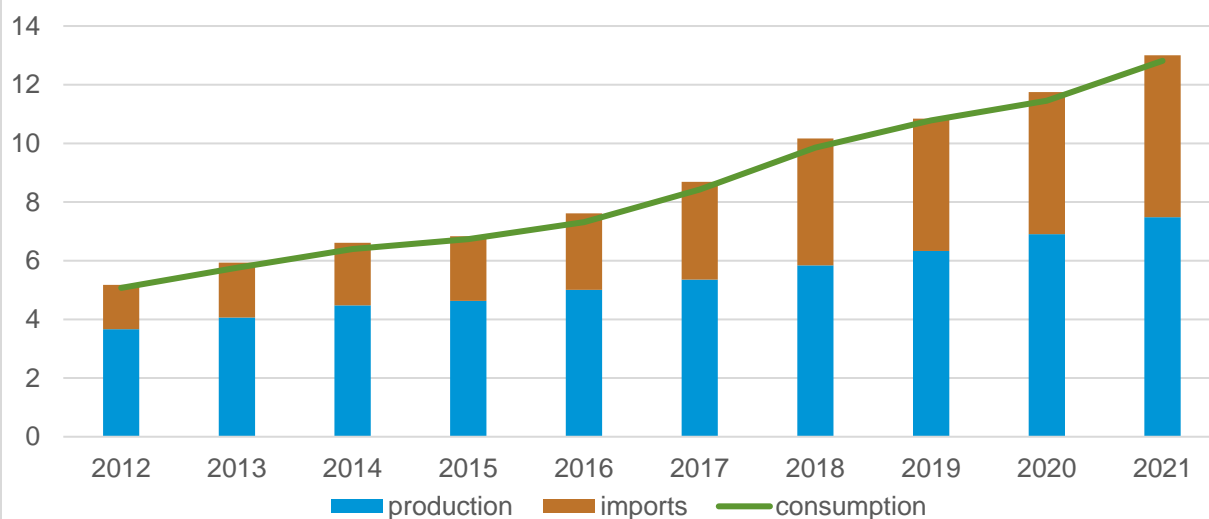
- China's total refinery capacity as of June 2023 was 19.8 million b/d. An additional 1.1 million b/d of capacity will be added by 2026. The 430,000 b/d Local Yulong project is the largest addition and starts operations in early 2025. The Panjin refinery, at 323,000 b/d of capacity, is the second-largest addition, and operations are slated to start in 2026.¹³
- China's refineries processed 13.5 million b/d in 2022—a 3.4% decline from 2021 and the first decrease in throughput since 2001.¹⁴
- China's refining industry is prioritizing integration of petrochemicals with the refineries. The initiative to integrate is meant to add long-term flexibility to deal with excess refining capacity. The shift is apparent across both state-owned and local companies because several refining projects are currently underway that have a significant petrochemical component.¹⁵ As projects come online, feedstock production, such as naphtha and liquid petroleum gases (LPG), will increase.¹⁶

Natural Gas

- China has increased its annual natural gas production every year since 1989. In 2022, natural gas production growth in China slowed to 3%. Natural gas production totaled 7.7 trillion cubic feet (Tcf), a record high, according to the National Bureau of Statistics of China.¹⁷

Figure 3. China's natural gas production, consumption, and imports, 2012–2021

trillion cubic feet



Data source: U.S. Energy Information Administration, *International Energy Statistics*.

- PetroChina's target for natural gas production in 2023 is 4.9 Tcf, approximately 5% higher than in 2022. They accounted for 58% of China's natural gas production in 2022.¹⁸
- CNOOC has two new natural gas projects, Bozhong 19-6 Phase I and Shenfu Block Mugua Zone, that are scheduled to come online in 2023. CNOOC projects a peak production to total 87 billion cubic feet annually for the projects.¹⁹
- Sinopec's natural gas production reached 661 billion cubic feet in the first half of 2023, a nearly 8% increase for the same period in the previous year.²⁰ Sinopec also received certification for 1 Tcf of proven natural gas reserves in its Sichuan Basin discovery, bringing proven reserves to 5.5 Tcf in the region.²¹
- China's natural gas consumption peaked in 2021 at 12.8 Tcf.²² In 2022, natural gas consumption declined by 1%, the first decline since 1990, according to the International Energy Agency. The decline in demand is attributed to several factors, including COVID-19 policy restrictions, slow economic growth, and high LNG prices. The largest drop in demand was in the electric power sector, where increased renewable capacity and coal production reduced natural gas-fired generation.²³
- China's 14th Five-Year Plan set a target for LNG and natural gas storage capacity to reach approximately 2.0 Tcf–2.1 Tcf by 2025, which is more than double its storage capacity at the beginning of 2023.²⁴

Table 3. China's existing regasification terminals

Project name	Owners	Peak output (billion cubic feet per year)	Start year
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Guangdong Dapeng LNG	CNOOC (33%); Guangdong Province Consortium (31%); BP (30%); HK & China Gas (3%); Hong Kong Electric (3%)	327	2006
Shanghai Wuhaogou LNG	Shenergy (100%)	72	2008
Fujian LNG	CNOOC (60%); Fujian Investment and Development Co (40%)	303	2009
Shanghai Yangshan LNG	Shenergy Group (55%); CNOOC (45%)	288	2009
Dalian LNG	PipeChina (75%); Dalian Port (20%); DalianConstruction Investment Corporation (5%)	288	2011
Jiangsu Rudong LNG	CNPC (55%); Pacific Oil and Gas (35%); Jiangsu Guoxin (10%)	480	2011
Jovo Dongguan	Jovo Group (100%)	48	2012
Zhejiang Ningbo LNG (1-2)	CNOOC (51%); Zhejiang Energy Company (29%); Ningbo Power (20%)	288	2012
Caofeidian (Tangshan) LNG	CNPC (51%); Beijing Enterprises GroupCompany (29%); Hebei Natural Gas (20%)	480	2013
Tianjin PipeChina LNG	PipeChina (100%)	288	2013
Zhuhai LNG	CNOOC (30%); Guangdong Energy (25%); Guangzhou Gas Group (25%); Local companies (20%)	168	2013
Hainan Yangpu LNG	PipeChina (65%); China Energy Group Haikong New Energy (35%)	144	2014
Shandong (Qingdao) LNG	Sinopec (99%); Qingdao Port(1%)	336	2014
Hainan Shennan LNG	Hainan CNPC Shennan Petroleum Technology Development (90%); Hainan Fushan Oil and Gas Chemical (10%)	14	2014
Guangxi Beihai LNG	PipeChina (80%); Guangxi Beibu Gulf Port Group (20%)	288	2016
Qidong LNG (1-3)	Xinjiang Guanghui Petroleum (100%)	144	2017
Jieyang (Yuedong) LNG	PipeChina (100%)	96	2018
Diefu LNG (Shenzhen)	PipeChina (70%); Shenzhen Energy Group (30%);	192	2018
Tianjin Sinopec LNG	Sinopec (98%); Tianjin Nangang Industrial Zone Developemnt Co (2%)	288	2018
Zhoushan ENN LNG	ENN (90%); Prism Energy (10%)	240	2018
Fangchenggang LNG	PipeChina (51%); Guangxi Beibu Gulf PortGroup (49%)	29	2019
Shenzhen Gas LNG	Shenzhen Gas (100%)	38	2019
Jiangsu Yancheng Binhai LNG	CNOOC (100%)	144	2022
Jiaxing Pinghu LNG	Jiaxing Gas Group (51%); Hangzhou Gas (49%)	48	2022
Qidong LNG 4	Xinjiang Guanghui Petroleum (100%)	96	2022
Hong Kong Offshore LNG	Castle Peak Power Company Limited (70%); Hongkong Electric Co., Ltd. (30%)	293	2023
Huizhou LNG	Guangdong Energy Group (100%)	293	2023
Total		5,715	

Data source: International Gas Union, 2023 World LNG Report Annual Report 2022

Note: LNG=liquified natural gas

Table 4. Regasification terminals under construction in China

Project name	Owners	Peak output (billion cubic feet per year)	Start year
Chaozhou Huafeng LNG	Sinoenergy (55%); Chaozhou Huafeng Group (45%)	48	2023
Chaozhou Huaying LNG	Huaying Investment Holding Group (50%); Sinopec Natural Gas Co Ltd (50%)	288	2023
Jiangsu Guoxin Rudong LNG	Jiangsu Guoxin (95%); Jiangsu Yangkou Port (5%)	144	2023
Jieyang (Yuedong) LNG 2	PipeChina (100%)	96	2023
Jiangsu Yancheng Binhai LNG 1 expansion	CNOOC (100%)	144	2023
Shandong (Qingdao) LNG 3	Sinopec (99%); Qingdao Port(1%)	192	2023
Sinopec Longkou LNG	Sinopec Gas (50%); Hengtong Logistics (32%); Longkou port (18%)	312	2023
Tangshan LNG 1	Suntien Green Energy (100%)	240	2023
Tianjin Nangang LNG 1	Beijing Gas (100%)	91	2023
Tianjin Sinopec LNG 2	Sinopec (98%); Tianjin Nangang Industrial Zone Developemnt Co (2%)	231	2023
Wenzhou Huagang LNG	Huafeng Grop (100%)	144	2023
Wenzhou LNG	Sinopec (41%); Zhejiang Energy Group (51%); Local firms (8%)	144	2023
Yantai LNG	Shandong Poly-GCL Pan-Asia International Energy Co., Ltd. (100%)	283	2023
Zhangzhou LNG 1	PipeChina (60%); Fujian Investment and Development Co (40%)	144	2023
Zhuhai LNG 2	CNOOC (30%); Guangdong Energy (25%); Guangzhou Gas Group (25%); Local companies (20%)	168	2023
PipeChinaLongkou Nanshan LNG	PipeChina (60%); Nanshan Group (40%)	240	2024
Tianjin PipeChina LNG 2	PipeChina (100%)	288	2024
Tianjin Nangang LNG 2	Beijing Gas (100%)	96	2024
Wuhu LNG	Huaihe Energy (100%)	72	2024
Yangjiang LNG	Guangdong Yudean Power (100%)	134	2024
Zhangzhou LNG 2	PipeChina (60%); Fujian Investment and Development Co (40%)	144	2024
Tianjian PipeChina LNG 3	PipeChina (100%)	312	2025
Shanghai LNG	Shenergy Group (60%); Zhejiang Energy (20%); CNOOC (20%)	144	2025
Qidong LNG 5	Xinjiang Guanhui Petroleum (100%)	240	2025
Tianjin Nangang LNG 3	Beijing Gas (100%)	48	2025
Xiexin Huidong Jiangsu Rudong LNG	Pacific Energy (49%); Xiexin Oil and Gas (26%); Huidon Investment (25%)	144	2025
Yingkou LNG	China Urban Rural Energy (75%); Hebei Shenneng Industry Group (25%)	298	2025

Zhejiang Ningbo LNG 3	CNOOC (51%); Zhejiang Energy Company (29%); Ningbo Power (20%)	288	2025
Zhoushan ENN LNG 3	ENN (90%); Prism Energy (10%)	240	2025
Jiangsu Ganyu (Huadian) LNG	China Huadian (51%); Lianyungang Port Group (20%); SK (14%); BP (10%); JERA (5%)	144	2026
Total		5,504	

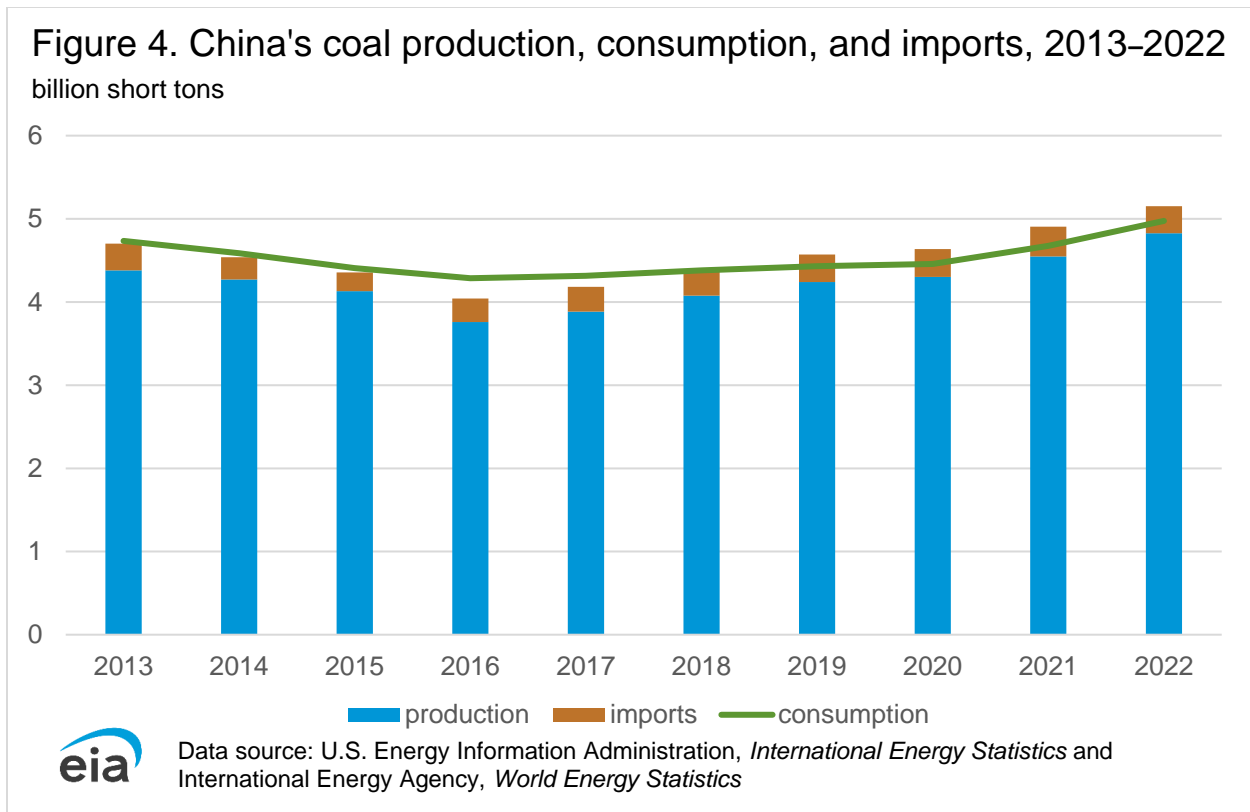
Data source: International Gas Union, 2023 World LNG Report

Note: LNG=liquified natural gas

- China's regasification capacity is the fastest growing in the world. In 2022, China had 5.7 Tcf of existing regasification terminals (Table 3) with a 63% utilization rate, and it had approved an additional 14 regasification projects, 5 of which have started construction (4 new constructions and 1 expansion).²⁵ China has 5.5 Tcf of regasification capacity under construction with operational start dates between 2023 and 2026 (Table 4).²⁶
- China is responsible for 37% of known global carbon-offset LNG trades. Carbon-offset trades are deals that allow sellers and buyers to offset the emissions of a cargo through the financing of projects that remove an equivalent amount of emissions elsewhere. China holds a carbon-neutral sales and purchase agreement between PetroChina and Shell in support of this initiative.²⁷

Coal

- China, the world's top coal producer, increased production 6% to hit a record-high 4.8 billion short tons in 2022 (Figure 5). Coal production rose in response to global market prices spiking in October 2021.²⁸
- China's coal consumption increased by 6% in 2022 to just shy of 5 billion short tons in 2022. Coal consumption was affected by China's real estate market decreasing 5%, lowering demand for coal for steel and cement production. These decreases were mostly offset by a severe, multi-month heatwave that caused droughts and, consequentially, lowered hydropower. However, coal-fired generation offset the loss of hydropower. China accounted for 53% of global coal consumption in 2022.²⁹
- Although total coal production increased 6% in 2022, coal-fired generation increased only by 1% because much of the increase in coal output had a lower heat value. As a result, more coal was used to generate about the same amount of electricity.³⁰
- Coal for non-power uses, including gasification of coal for synthetic fuels, plastics, and fertilizers, grew by 7%.



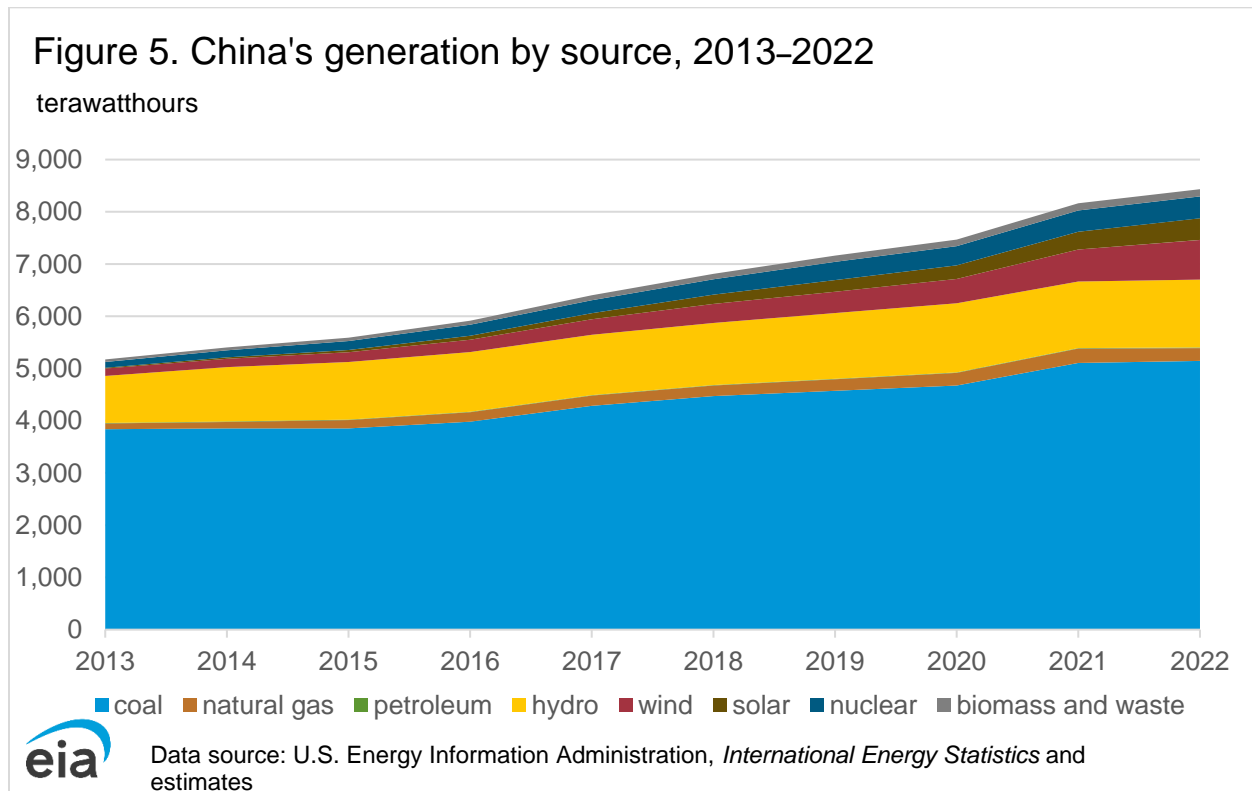
- China added 19.5 GW of coal power capacity in 2022, despite pledging to reduce coal consumption.³¹ Additionally, construction of coal projects that started in 2022 will add 50 GW of capacity which is over 50% more than capacity that started construction in 2021. There were 106 GW of new coal power capacity granted permits in 2022, a 360% increase from 2021. The majority of the capacity is in the Guangdong, Jiangsu, Anhui, Zhejiang, and Hubei provinces.³²

Electricity

- China plans to reach its CO₂ emissions peak by 2030 and to reach carbon neutrality by 2060. As part of this goal, China plans to bring the total installed wind and solar capacity to 1,200 GW by

2030.³³ At the end of 2022, wind and solar had a combined installed capacity of 758 GW. In 2023, China is on track to add 95 GW to 120 GW of solar, and as of May 2023, 61 GW had already been added.³⁴ BloombergNEF forecasts China will add 64 GW of installed wind capacity, 56 GW onshore and 8 GW offshore, in 2023.³⁵

- China's electricity generation growth slowed to 3% in 2022. Fossil fuels accounted for 64% of all generation, 2% less than in 2021. Coal, which accounted for the largest share of all generation (61%), and petroleum-fired generation both increased slightly from 2021. However, natural gas-fired generation decreased by 11%, mainly due to elevated natural gas prices. In 2022, natural gas-fired generation decreased for the first time since 2002.³⁶



- Renewable generation, including hydropower, increased by the largest percentage in 2022.
 - Wind generation increased the most in 2022, rising 24% from 2021. It's share of total generation also increased, from 8% to 9%.
 - Solar generation increased by 22% from 2021 and increased its share of total generation from 4% to 5%.
 - Hydropower generation increased by 2%, despite droughts that hindered generation. However, at 1,300 terawatthours, total hydropower was still slightly lower than its previous peak in 2020.³⁷
- China is adding energy storage as part of its goal to reach peak carbon emission by 2030.³⁸
 - China is adding pumped-storage hydropower facilities to help maintain grid resilience with increasing wind and solar power capacity. At 50 GW, China has 30% of operational global

- capacity. An additional 89 GW of capacity is currently under construction, and another 276 GW of capacity are in various stages of development.³⁹
- China is investing in battery storage and plans to add approximately 100 GW of storage capacity by 2030.⁴⁰
 - China had 56 GW of installed nuclear capacity in 2022. As of October 2023, 26 GW of capacity were under construction and are expected to be operational by 2028 (Table 5). An additional 50 GW are in the early stages of development, according to the World Nuclear Association.⁴¹
 - China's installed power capacity in 2022 was 2,594 GW, a 10% increase from 2021. Renewables added 151 GW of capacity in 2022, which accounted for 45% of total capacity and the majority of new capacity added (63%). Hydropower capacity increased by 16% to 414 GW. Solar increased by 15% to 393 GW, and wind grew by 11% to 365 GW. Fossil fuels added 87 GW of capacity.⁴²

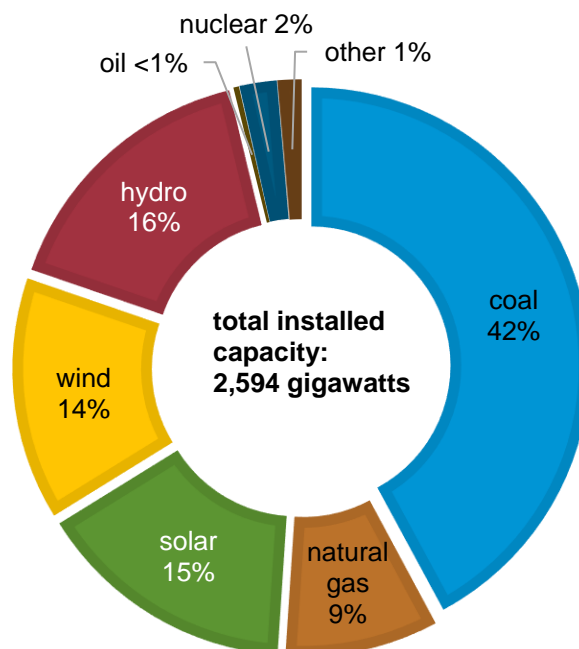
Table 5. China's under construction nuclear power reactors, 2023

Project name	Province	Capacity (megawatts)	Operator	Expected start
Xiapu 1	Fujian	600	CNNC	2023
Xiapu 2	Fujian	600	CNNC	2026
Zhangzhou 1	Fujian	1212	Guodian & CNNC	2024
Zhangzhou 2	Fujian	1212	Guodian & CNNC	2025
Huizhou Taipingling 1	Guangdong	1200	CGN	2025
Huizhou Taipingling 2	Guangdong	1202	CGN	2026
Lufeng 5	Guangdong	1200	CGN	2028
Fangchenggang 4	Guangxi	1180	CGN	2024
Changjiang 3	Hainan	1200	Huaneng & CNNC	2026
Changjiang 4	Hainan	1200	Huaneng & CNNC	2027
Changjiang SMR 1	Hainan	125	CNNC	2025
Tianwan 7	Jiangsu	1200	CNNC	2026
Tianwan 8	Jiangsu	1200	CNNC	2027
Xudabao 3	Liaoning	1200	CNNC, Datang	2027

Xudabao 4	Liaoning	1200	CNNC, Datang	2028
Haiyang 3	Shandong	1250	SPIC	2027
Haiyang 4	Shandong	1250	SPIC	2027
Shidaowan 1	Shandong	1500	SPIC & Huaneng	2024
Shidaowan 2	Shandong	1500	SPIC & Huaneng	2025
Cangnan/San'ao 2	Zhejiang	1150	CGN	2026
Cangnan/San'ao 2	Zhejiang	1150	CGN	2027
Sanmen 3	Zhejiang	1250	CNNC	2027
Sanmen 4	Zhejiang	1250	CNNC	2028
Total:		26,031		

Data source: World Nuclear Association Note: MW=megawatt.

Figure 6. China's installed electricity generating capacity by type, 2022



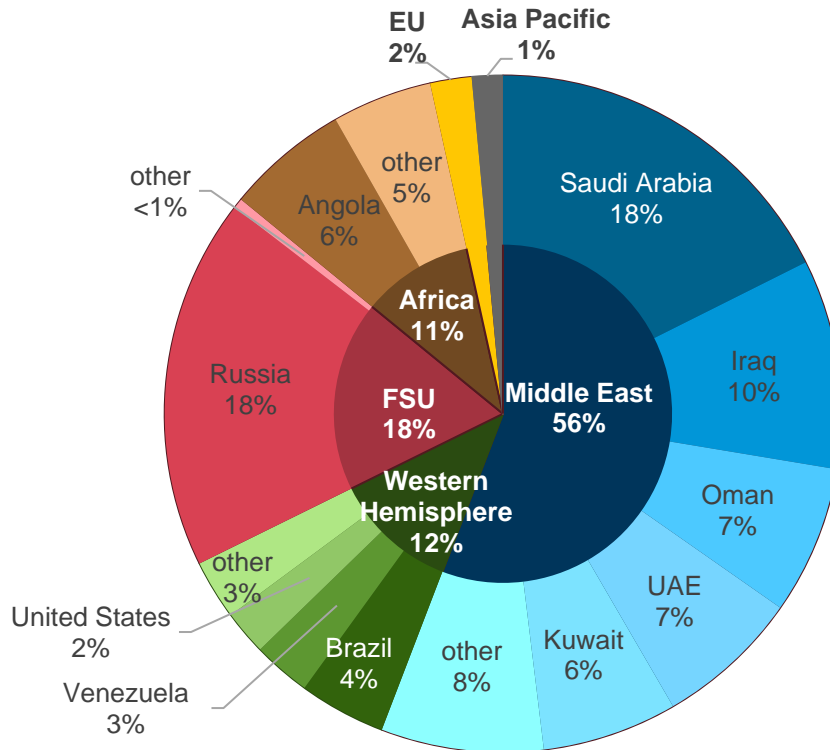
Data source: U.S. Energy Information Administration, *International Energy Statistics* and estimates
Note: Numbers may not equal 100% due to independent rounding.

Energy Trade

Petroleum and other liquids

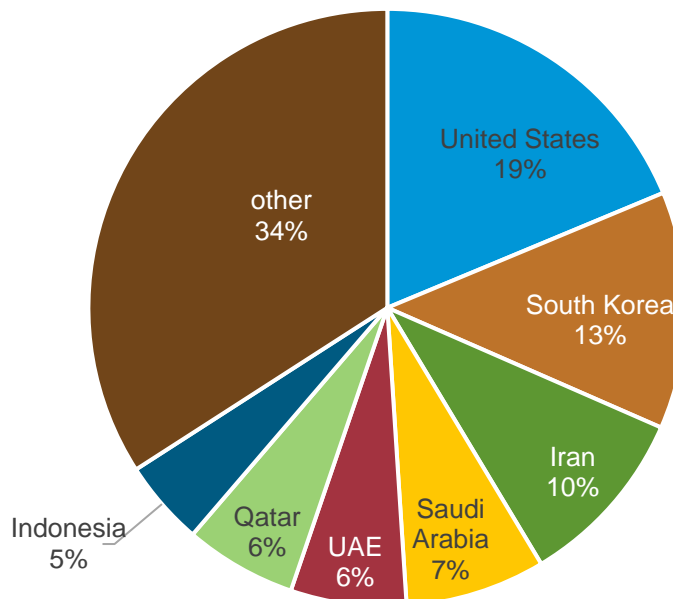
- China's crude oil imports decreased for the second year in a row: a 1% decrease to 10.2 million b/d in 2022 from 10.3 million b/d in 2021. Despite a significant increase in crude oil imports at the end of 2022, lower fuel demand and shrinking refining margins caused the decline in annual crude oil imports. The increase at the end of the year is attributed to lower prices on crude oil from Saudi Arabia and Iran, as well as independent refiners needing to use their quotas before the end of the year.⁴³
- Nearly all of China's crude oil imports arrive via seaborne shipments (97%), and the rest come via pipeline.⁴⁴ The state-owned China National Petroleum Corporation purchases approximately 800,000 b/d from Rosneft through the Eastern Siberia-Pacific Ocean pipeline in the first quarter of 2023.⁴⁵
- Saudi Arabia and Russia were the two top sources of crude oil imports for China in 2022, both accounting for an 18% share of total imports.⁴⁶ However, sanctions and a price cap imposed on Russia's crude oil in early 2023 has led to large discounts on crude oil from Russia. Because of these lower prices, Russia overtook Saudi Arabia in 2023 as China's top source of crude oil imports (China has not agreed to the price cap).⁴⁷
- The largest increases in crude oil imports in 2022 compared with 2021 from China's top suppliers are:
 - Crude oil imports from Iran doubled from approximately 281,000 b/d to 561,000 b/d in 2022.⁴⁸
 - Crude oil imports from Venezuela increased 52% from approximately 177,000 b/d to 270,000 b/d in 2022.⁴⁹
 - Crude oil imports from the United Arab Emirates increased 40% from 480,000 b/d to 674,000 b/d in 2022.⁵⁰
 - Crude oil imports from Russia increased 8% from just below 1.6 million b/d to over 1.7 million b/d in 2022.⁵¹
- China's petroleum product imports decreased by 8% to 2.4 million b/d. Imports from the United States, the top source of China's petroleum product imports, increased 15% from 2021. A significant portion of imports came from the Middle East; however, China imports petroleum products from a diverse group, and only two countries (the United States and Saudi Arabia) account for shares that exceed 10%.⁵²

Figure 7. China's crude oil and condensate imports by source, 2022



Data source: Vortexa and Global Trade Tracker
 Note: Total may not equal 100% due to independent rounding. FSU=former Soviet Union.

Figure 8. China's petroleum product imports by source, 2022

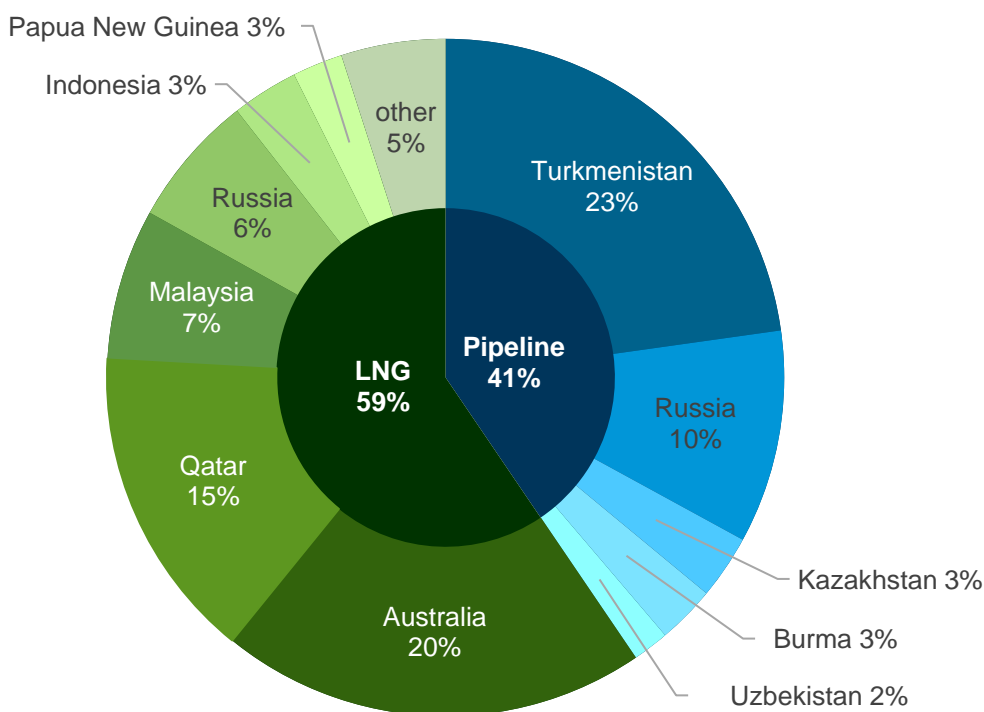


Data source: Vortexa
 Note: Total may not equal 100% due to independent rounding. FSU=former Soviet Union.

Natural gas

- China imported 3.0 Tcf of LNG in 2022, a 20% decrease compared with 3.8 Tcf in 2021. As a result, China was the second-highest global LNG importer in 2022. This decline is the result of increased domestic production, high spot prices, and decreased demand.⁵³
- China's total natural gas imports decreased in 2022. A decrease in LNG imports reduced its share of total natural gas imports to 59%, a 6% decrease from 2021 (Figure 9). Pipeline import volumes remained relatively flat in 2022, but its share of total natural gas imports increased.⁵⁴
- Turkmenistan surpassed Australia as China's top source of natural gas imports. Australia dropped to second in overall natural gas imports but was the top source of LNG imports. Pipeline imports from Russia grew by 43%, and Russia's LNG imports increased by 46%, making Russia the third-largest source of natural gas imports to China in 2022.⁵⁵

Figure 9. China's natural gas imports by source, 2022



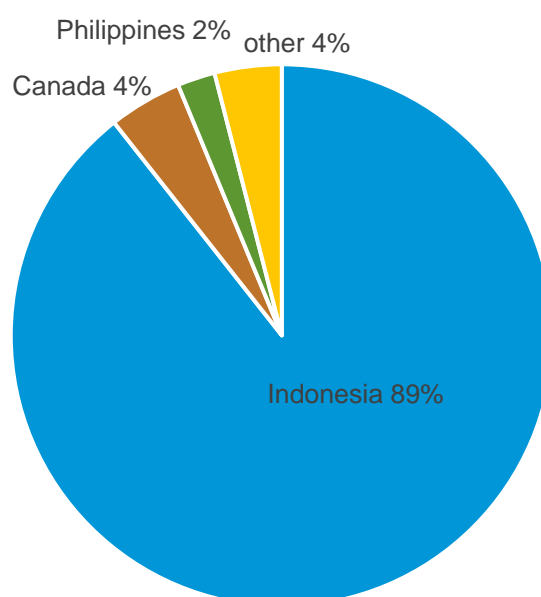
Data source: Energy Institute, *Statistical Review of World Energy* and GIIGNL, *Annual Report 2023*
 Note: Numbers may not equal 100% due to independent rounding. LNG=liquefied natural gas.

Coal

- China's coal imports decreased by approximately 40% in 2022, from 357 million short tons in 2021 to just over 210 million tons,⁵⁶ as a result of higher domestic production in response to higher prices.⁵⁷ Lower coal imports resulted in China moving to the second-largest coal importer by weight in the world, behind India.⁵⁸

- Indonesia remained China's top source of coal imports. Although Indonesia's coal imports declined in 2022 by about 25 million short tons compared with 2021, its share of coal imports to China increased from 64% in 2021 to 89% in 2022. Most of the increase replaced coal from Russia and Mongolia. Russia's share of coal imports fell from 17% in 2021 to 1% in 2022, and Mongolia's share declined to 0% in 2022, compared with 6% in 2021.⁵⁹
- Australia, which was one of China's top coal suppliers prior to 2021, did not export any coal to China in 2022 because of China's unofficial coal ban on supplies from Australia. However, China lifted the ban and started importing coal again in 2023. From April through July of 2023, China's average coal imports were over 5 million short tons per month from Australia.⁶⁰

Figure 10. China's coal imports by source, 2022



Data source: Global Trade Tracker

Note: Numbers may not equal 100% due to independent rounding.

¹ Hannah Ellis-Petersen, "India overtakes China to become world's most populous country," *The Guardian*, April 24, 2023.

² *The World Bank*, accessed August 15, 2023; *Navigating Uncertainty China's Economy in 2023* (Washington, DC: The World Bank, 2022), Page 12-13.

³ "Barclays cuts China's 2023 GDP growth forecast to 4.5%," Reuters, last modified August 15, 2023.

⁴ U.S. Energy Information Administration, *International Energy Statistics*.

⁵ U.S. Energy Information Administration, *International Energy Statistics*.

⁶ U.S. Energy Information Administration, *International Energy Statistics*.

⁷ Vortexa (accessed May 2023).

⁸ U.S. Energy Information Administration, *International Energy Statistics*.

⁹ Fanny Zhang, "China's Sinopec 2022 net profit falls 8.1% on weak demand, high cost," ICIS, last modified March 27, 2023; Yi Wei Wong, "Sinopec's 2022 Net Profit Fell 6.9% as Domestic Demand Waned -- Update," Market Screener, last modified March 26, 2023.

¹⁰ CNOOC Limited, "2023 Strategy Preview," January 11, 2022, page 7, 14, and 22.

- ¹¹ Chen Aizhu, "[PetroChina expects oil demand recovery after record 2022 profit](#)," *Reuters*, March 30, 2023.
- ¹² U.S. Energy Information Administration, *International Energy Statistics*; U.S. Energy Information Administration, *Short-Term Energy Outlook*, August 2023.
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