



# China Country Analysis Brief

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## Overview

Table 1. China energy indicators, 2023

	Petroleum and other liquids	Natural gas	Coal	Nuclear	Hydro	Other renewables	Total
Primary energy production (quads)	9.0	8.5	93.8	4.4		10.8	126.6
Primary energy production (percentage)	7%	7%	74%	4%		9%	100%
Primary energy consumption (quads)	32.2	14.6	100.1	4.4		10.5	161.9
Primary energy consumption (percentage)	20%	9%	62%	3%		6%	100%
Generation (billion kWh)	11.6	272.0	5,499.2	433.4	1,242.3	1,660.9	9,119.4
Generation (percentage)	<1%	3%	60%	5%	14%	18%	100%

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

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

- For the third year in a row, China's population declined in 2025 after decades of continuous growth, falling to 1.42 billion people.<sup>1</sup>
- China's economy is the world's second-largest. Its gross domestic product (GDP) grew by 5.0% in 2024, in line with a government target of around 5% growth, however, growth estimates across sources vary and indicate that China's GDP grew by 2% to 3%. Stimulus measures in the second half of the year as well as increased exports at the end of the year fostered growth.<sup>2</sup>
- Natural gas accounted for the largest increase in primary energy production (6.2%) in 2023 from the previous year, followed by nuclear (3.7%). However, natural gas had the second-largest increase in primary energy consumption (7.4%) after petroleum and other liquids (8.6%). Although coal accounted for the largest share of primary energy production, it grew the least year on year, at 1.3%. Coal still accounted for most (62%) of the energy consumed in China (Table 1).<sup>3</sup>
- In 2024, non-fossil fuels accounted for 56% of total installed electricity generation capacity. Although most of the electricity generation (63%) came from fossil fuels, fossil fuels share of generation decreased by 1% from the previous year.<sup>4</sup>
- China added 356 gigawatts (GW) of non-hydro renewable generation capacity in 2024. Of this, solar accounted for 277 GW, and wind accounted for 79 GW.<sup>5</sup>
- Electric vehicles (EVs) accounted for 48% of new vehicle sales in 2024 for the first time, which surpassed the country's 2030 target of 40% by six years. Strong government support, a competitive market that has allowed more than half of EVs to be sold at lower prices than their internal combustion engine (ICE) competitors, and advancements in battery and smart vehicle technologies contributed to this milestone.<sup>6</sup>

Map 1. China



Data source: U.S. Energy Information Administration and World Bank

## Petroleum and Other Liquids

- Petroleum and other liquids production increased by 73,000 barrels per day (b/d) in 2024 from the previous year (Figure 1), driven by Chinese government push for national oil companies to increase production and exploration.<sup>7</sup> In 2024, petroleum and other liquids production reached a record high 5.3 million b/d, the fifth-highest in the world.
- In 2024, crude oil and condensates production, which accounted for more than 79% of petroleum and other liquids production, increased another 51,000 b/d to over 4.2 million b/d.<sup>8</sup>
- In 2024, China's government held an estimated 290 million barrels in the strategic petroleum reserve, according to Vortexa. In mid-2024, Chinese government directed its national oil companies to add 59 million barrels to the reserves by March 2025.<sup>9</sup>

Table 2. China's National Oil Companies Production, 2024

	Sinopec	China National Offshore Oil Company (CNOOC)	PetroChina
Domestic crude oil production, 2024	696,000 b/d	1 million b/d	2.6 million b/d
2023–2024 YoY change (%)	1%	5%	<1%
Proved reserves, 2024	2.1 billion barrels	7.3 billion BOE*	5.4 billion barrels

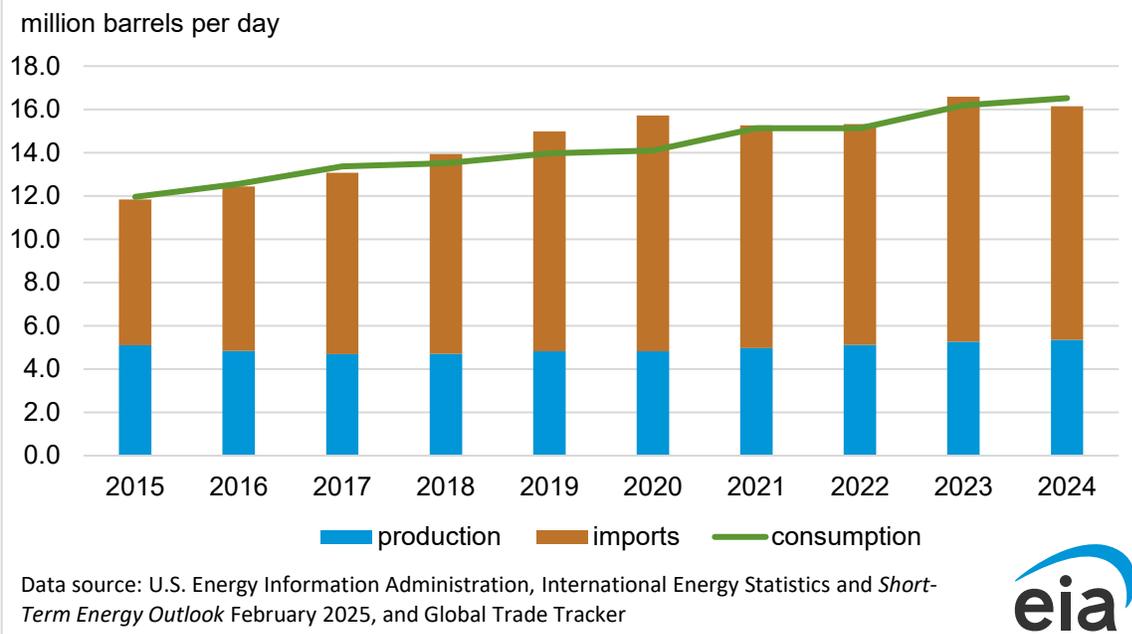
Data source: CNOOC 2024 Annual Results, Sinopec 2024 Annual Report and Accounts, and PetroChina 2024 Annual Report

Note: Rounding of numbers and different definitions of condensate may contribute to discrepancies between production numbers found here and those in other parts of the brief.

\*CNOOC reserve numbers are in BOE (barrel of oil equivalent) due to the number representing both crude oil and natural gas.

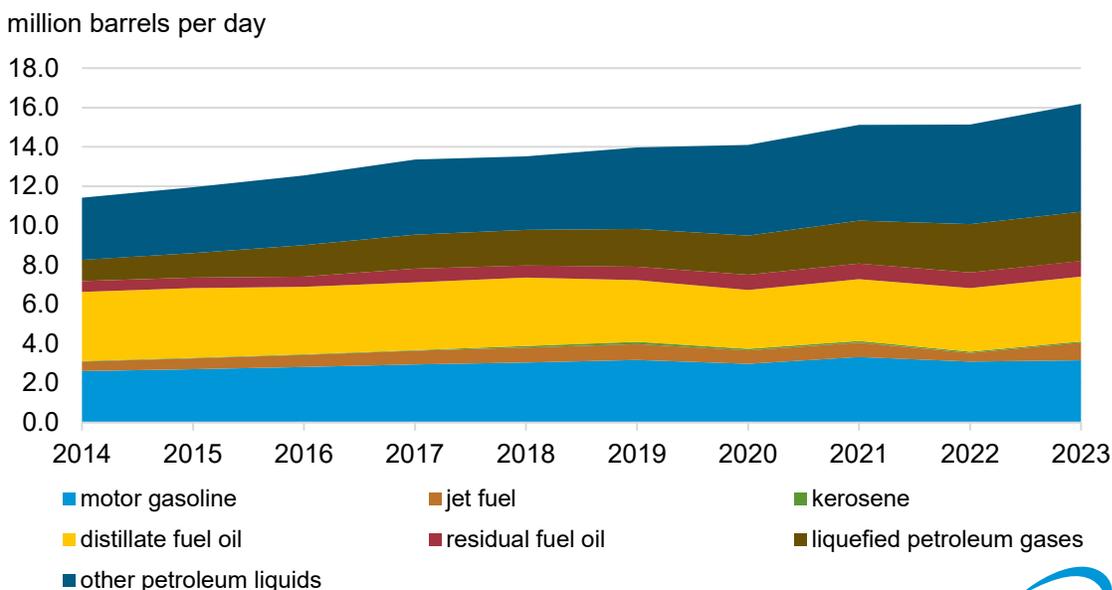
- China's national oil companies (NOCs), Sinopec, China National Offshore Oil Corporation (CNOOC), and China National Petroleum Corporation (CNPC), are responsible for the vast majority of its crude oil production (Table 2).
- CNOOC's net production targets are approximately 2.1 million BOE/d for 2025 and between 2.1 million BOE/d and 2.2 million BOE/d for 2026. To support these targets, CNOOC has four projects scheduled to come online in 2025, which it expects will have a peak total production at 76,500 b/d.<sup>10</sup>
- PetroChina, a subsidiary of CNPC, expects its crude oil production to remain relatively flat at 2.6 million b/d and refinery output to decrease to under 3.7 million b/d.<sup>11</sup> China National Petroleum Corporation (CNPC), PetroChina's parent company, expects oil consumption for China to peak in 2025.<sup>12</sup> Similarly, Sinopec forecasts that China's cr consumption will peak in 2027.<sup>13</sup>

Figure 1. China's petroleum and other liquids production, consumption and imports 2015–2024



- China consumed the second most petroleum and other liquids in the world in 2024. Consumption grew by approximately 70,000 b/d in 2024, after growing by more than 1 million b/d in 2023 driven by the lifting of Covid-19 restrictions and increased refining capacity to meet fuel needs.<sup>14</sup> Demand growth slowed in 2024 because of slowing use of liquid fuels for transportation, which resulted from increased sales of new energy vehicles—including battery electric vehicles; plug-in hybrids; and fuel cell vehicles—advancements in its high-speed rail network, and a slowdown in its property sector, which affected diesel demand.<sup>15</sup> In 2023, China's consumption growth was mainly driven by increased demand in jet fuel which more than doubled from the previous year because air travel increased after COVID-19 travel restrictions were lifted (Figure 2).<sup>16</sup>

Figure 2. China's refined petroleum product consumption, 2014–2023



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

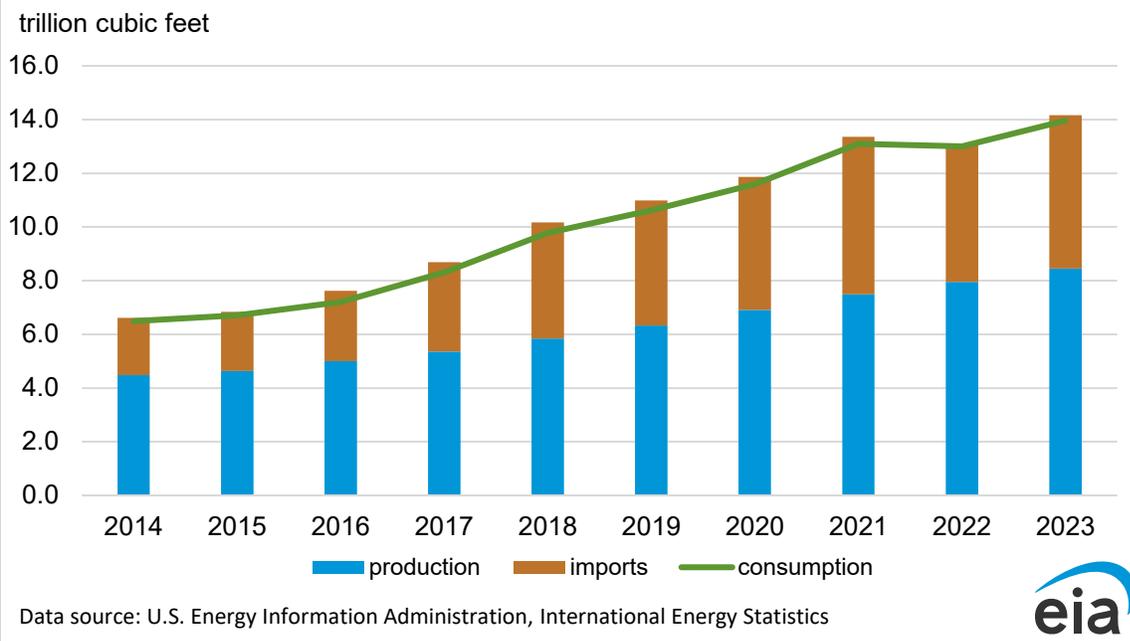


- China's total refinery capacity was 19 million b/d in 2024. China's government announced it would cap refinery capacity at 20 million b/d by 2025. The Yulong Petrochemical plant in Shandong is due to start its second 200,000-b/d crude refinery unit in 2025.<sup>17</sup>
- In 2022, 10 small refineries with a total of 540,000 b/d capacity were shut down in anticipation of the Yulong Petrochemical plant going into operation. PetroChina will close its 410,000-b/d refinery in Dalian in 2025 and replace it with a smaller refinery focused on petrochemical production.<sup>18</sup>
- China's refined petroleum product consumption grew every year from 1998 to a record-high 16.2 million b/d in 2023 (Figure 2). However, domestic refineries processed only 14.2 million b/d in 2024, approximately 75.5% of capacity (a 4.1% decline from 2023), which was driven by a net decline in demand for transportation fuels.<sup>19</sup> Adoption of electric and hybrid passenger cars has slowed gasoline consumption growth.<sup>20</sup> Similarly, increased adoption of LNG-fueled and electric heavy-duty trucks, as well as slow economic growth, decreased gasoil demand by 2.5% in 2024 from the previous year.<sup>21</sup>
- China has smaller, independent refineries that process imported fuel oil that have a capacity of over 400,000 b/d. These refiners include those that do not qualify for crude oil import quotas.<sup>22</sup>

## Natural Gas

- In 2023, natural gas production in China grew by 6.2% from a year earlier, and totaled 8.5 trillion cubic feet (Tcf), a record high (Figure 3). Most of production (58%) came from conventional gas. Tight gas (26.8%), shale gas (10.8%), and coalbed methane (5.2%) made up the rest.<sup>23</sup>

Figure 3. China's natural gas production, consumption, and imports 2014–2023



- PetroChina produced 5.6 Tcf of natural gas, accounting for 67% of China's natural gas production in 2023. The company produced approximately 23% more natural gas than in 2022.<sup>24</sup>
- CNOOC controls all of China's offshore natural gas production and has one new natural gas project, Shenhai-1 Phase II, which is scheduled to come online in 2025. CNOOC projects a peak production for the project of 160 million cubic feet per day.<sup>25</sup>
- Sinopec accounted for 16% of China's natural gas production in 2023.<sup>26</sup> Sinopec increased natural gas production by 7.1% to 1.3 Tcf in 2023 from the previous year. The company's proved natural gas reserves also increased by 5.7% in 2023 to 9.3 Tcf.<sup>27</sup>
- In 2024, the China-Russia East-Route natural gas pipeline was fully completed, increasing the pipeline's capacity to 1.3 Tcf.<sup>28</sup>
- China's total natural gas consumption grew 6.2% in 2023 to 14.0 Tcf.<sup>29</sup> Natural gas consumption increased across all sectors.<sup>30</sup>
- At the end of 2023, more than 35 underground natural gas storage facilities were operating in China, with a combined capacity of 0.94 Tcf. In addition, 36 underground natural gas projects were under construction, which, if completed, will add 1.2 Tcf of capacity by 2028.<sup>31</sup>
- In 2023, 29 LNG regasification terminals, with a capacity of 6.2 Tcf, were operating in China. Of these 29 regasification terminals, 18 terminals (81%) were operated by China's national oil companies.<sup>32</sup>
  - PipeChina has seven operating terminals with a total capacity of 1.3 Tcf.<sup>33</sup>
  - CNOOC has five operating terminals with a total capacity of 1.2 Tcf.<sup>34</sup>
  - Sinopec has three operating terminals with a total capacity of 1.2 Tcf.<sup>35</sup>
  - CNPC has three operating terminals with a total capacity of 1.0 Tcf.<sup>36</sup>

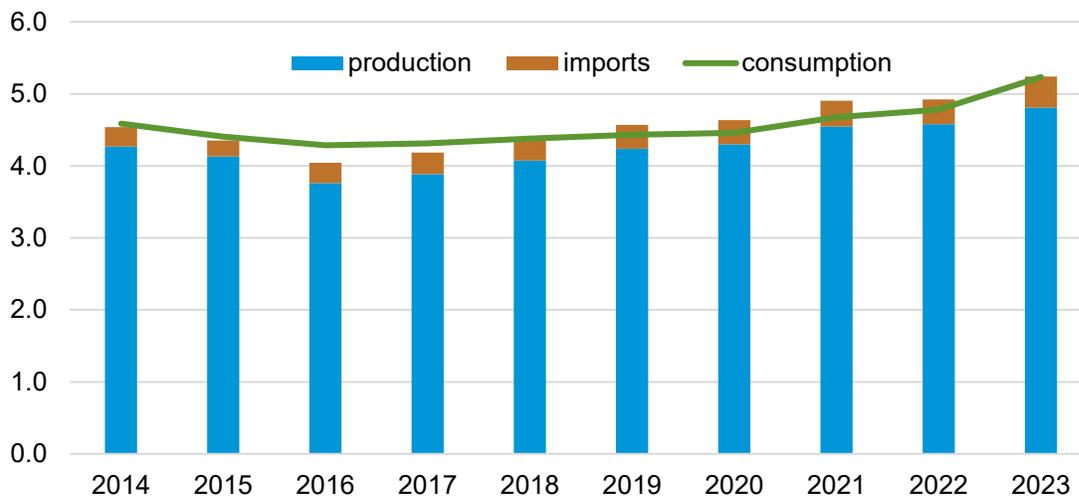
- In 2023, China added 1.1 Tcf of regasification capacity, representing 31.3% of additional global capacity that year. The country had the third-most capacity behind Japan and South Korea, and its terminals had an average utilization rate of 55%.<sup>37</sup>

## Coal

- China, the world’s top coal producer and consumer, increased production by 5.0% to a record-high 4.8 billion short tons in 2023 (Figure 4). China’s top-producing province, Shanxi, produced 1.4 billion short tons in 2023. The rise in production is attributed to China’s push for energy security and to countering market price volatility.<sup>38</sup>
- Most of the coal that China produces is bituminous (71%), followed by metallurgical (12%), and anthracite (11%) (Figure 5).<sup>39</sup>
- China’s coal consumption increased by 9.7% in 2023 from the previous year, to 5.2 billion short tons. Growth in electricity demand was the largest driver of coal consumption increases in 2023. China’s 1,200 gigawatts (GW) of coal-fired generation capacity alone accounts for about one-third of global coal consumption.<sup>40</sup>
- China’s metallurgical coal demand of 706 million short tons was 13.5% of the country’s total coal consumption in 2023 and accounted for about two-thirds of global metallurgical coal consumption. Most of China’s metallurgical coal consumption is used for pig iron processing.<sup>41</sup>

Figure 4. China's coal production, consumption and imports, 2014–2023

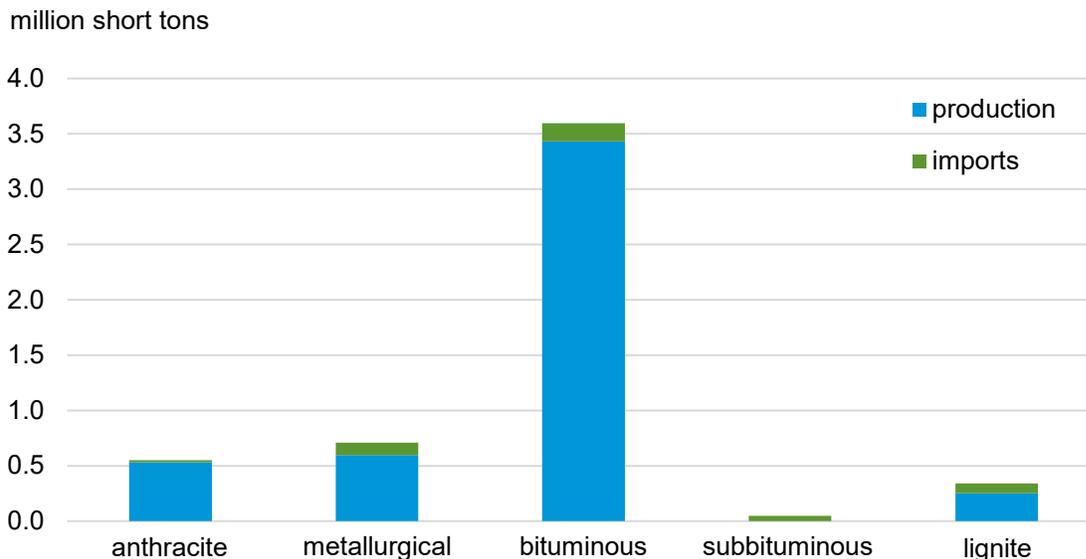
billion short tons



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



Figure 5. China's coal production and imports by type, 2023



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



- China added 48 GW of coal-fired generation capacity in 2024, close to the 47 GW of coal capacity added in 2023.<sup>42,43</sup> China approved 67 GW of additional coal-fired generation capacity and started construction on 95 GW of coal power projects in 2024.<sup>44</sup>

## Electricity

- China's installed generation capacity in 2024 was 3,400 GW, a 16% increase from 2023 (Figure 7). Renewables added 421 GW of capacity in 2024 (Map 3) and accounted for 55% of total capacity and most of the new capacity added (88%). Hydropower capacity increased by 18% to 436 GW. Solar increased by 45% to 887 GW, and wind grew by 18% to 521 GW. Fossil fuel capacity grew by 54 GW, most of which (48 GW) was coal capacity (Map 2).<sup>45</sup>
- China's electricity generation grew 6.9% to 9,300 TWh in 2023. Fossil fuels accounted for 64.0% of all generation, the same amount as in the previous year. Coal represented the largest share of all generation (59.3%, or 5,500 TWh), followed by natural gas (2.9%, or 272 TWh) and petroleum-fired (0.1%) generation. The fossil fuel share of generation remained relatively flat from 2022 (Figure 6). However, the non-hydroelectric renewables (solar and wind) share of generation grew by 18.1%.<sup>46</sup>
- Under China's Nationally Determined Contribution target, the country aims to have carbon dioxide emissions peak by 2030 and to reach carbon neutrality by 2060. As part of this goal, China planned to bring the total installed wind and solar capacity to 1,200 GW by 2030.<sup>47</sup> At the end of 2024, wind and solar had a combined installed capacity of 1,407 GW.<sup>48</sup>

Figure 6. China's electricity generation by source, 2014-2023

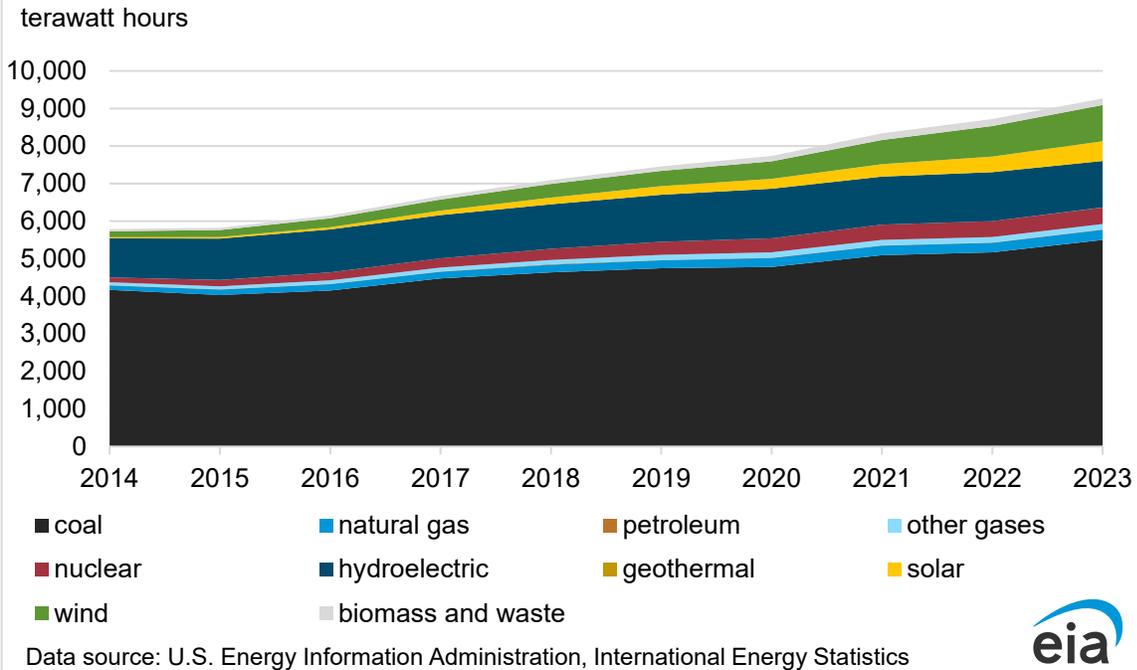
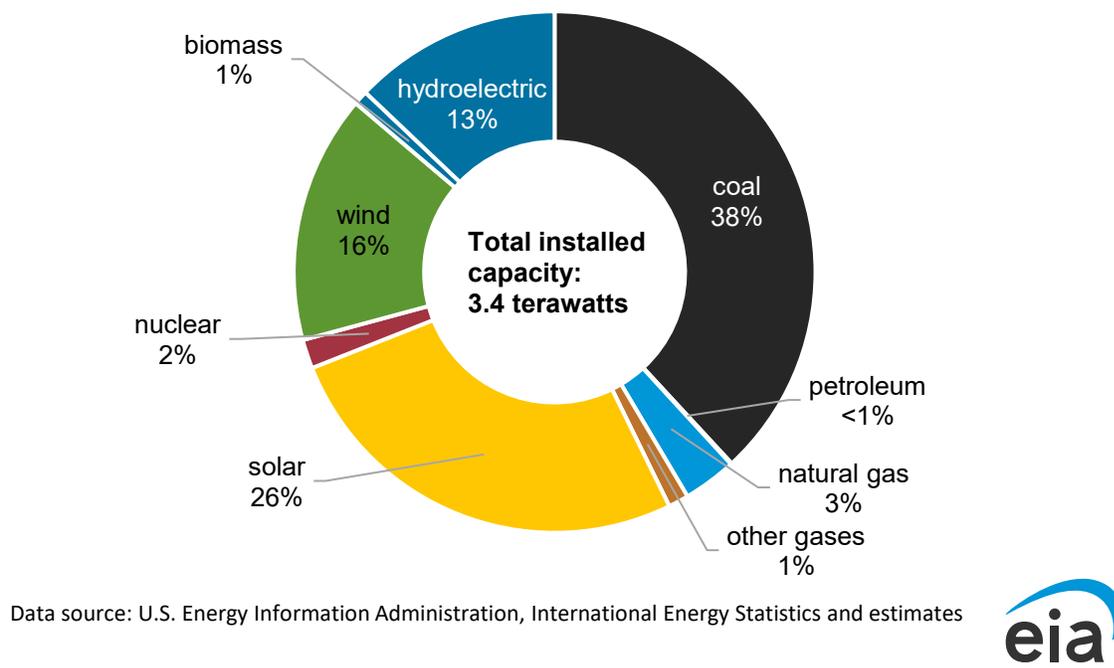
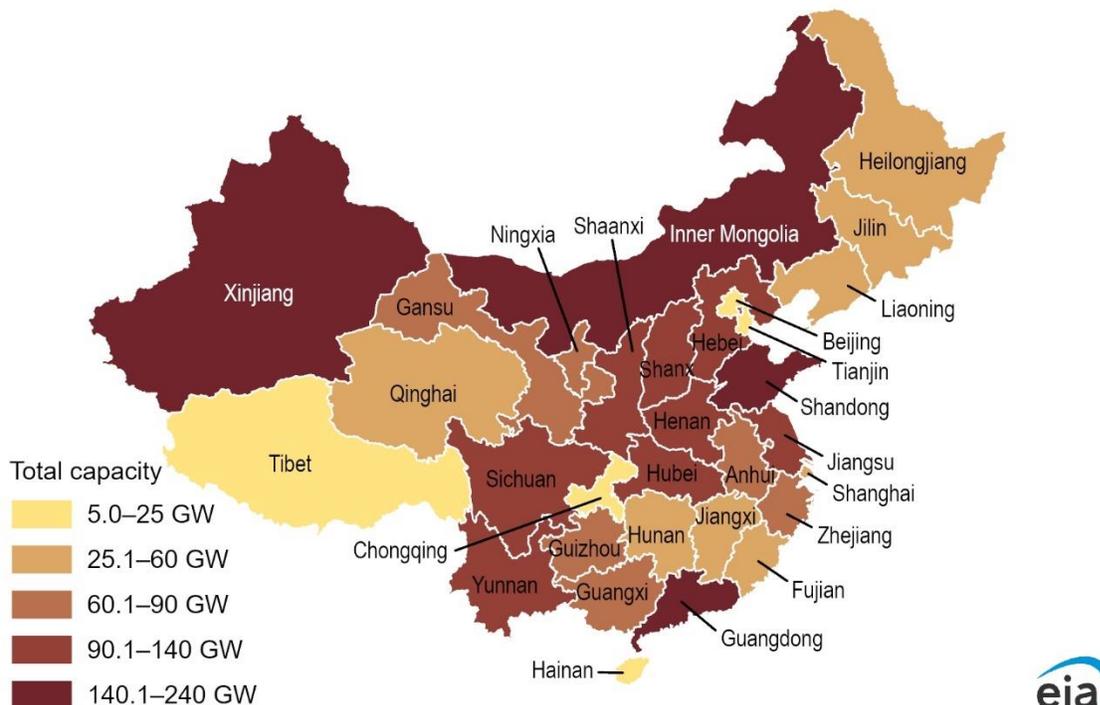


Figure 7. China's installed generation capacity, 2024



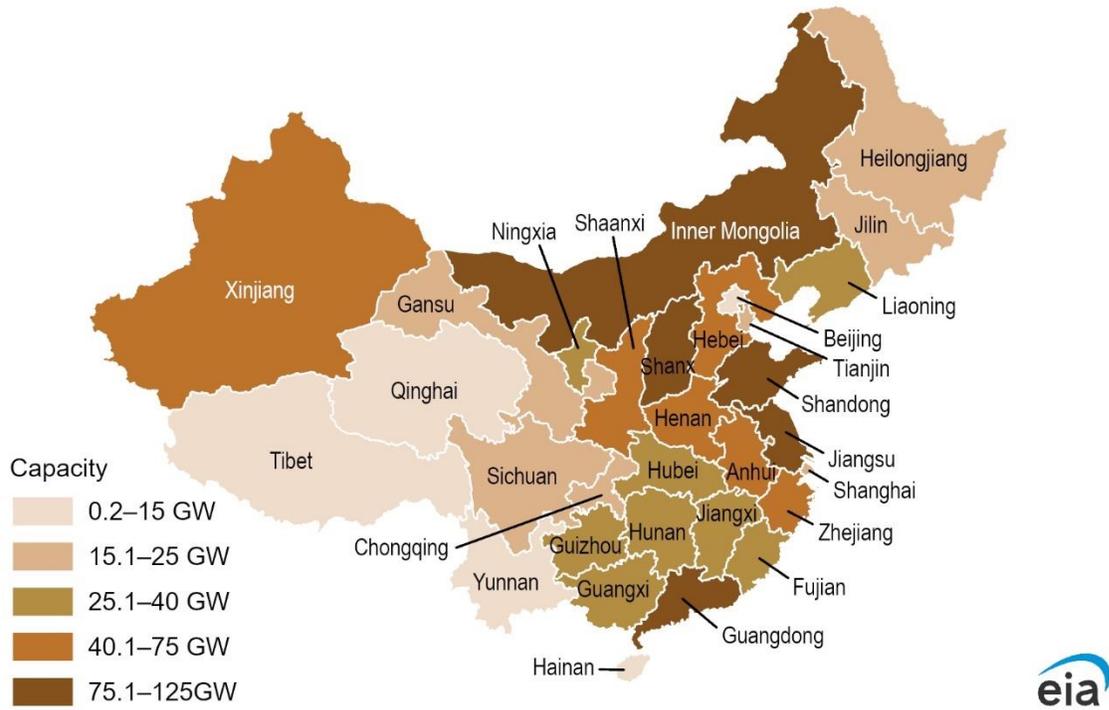
- Renewable generation, not including hydropower, increased by the largest percentage year over year in 2023.
  - Solar generation increased the most in 2023, rising 36.7% from 2022 to 523 TWh.
  - Wind generation increased by 16.2% between 2022 and 2023 to 964 TWh.
  - Hydropower generation decreased by 4.9% to 1,242 TWh from 2022 to 2023, because of droughts.<sup>49</sup>
- China is adding energy storage as part of its goal to peak carbon emissions by 2030.<sup>50</sup>
  - China had 51 GW of pumped-storage hydropower capacity in 2023, representing 30% of operational global capacity, with a target to reach 62 GW by 2025. An additional 89 GW of capacity is currently under construction, and another 176 GW of capacity are in various stages of development.<sup>51</sup>
  - China had almost 74 GW of installed *new energy storage* capacity in 2024, a 130% increase from the previous year's 31 GW (most of which was battery storage capacity).<sup>52</sup> China defines new energy storage as batteries and other emerging technologies such as compressed air, flywheel, and thermal energy storage.<sup>53</sup>
  - In 2024, China had 42 ultra-high voltage (UHV) transmission lines for a total length of approximately 25,000 miles and a transmission capacity of over 300 GW. UHV transmission lines operate with either a direct current exceeding 800 kilovolts or an alternating current of 1,000 kilovolts. An additional 12 lines are under construction. One of the more prominent transmission lines completed in 2024, the Zhangbei-Shengli 1,000-kilovolt UHV AC project, connects Inner Mongolia and the northern part of Hebei Province, which have a high amount of coal and renewable generation capacity, with provinces on the eastern border and as far south as Jiangsu (Map 2).<sup>54</sup>

**Map 2. China's total electricity generation capacity by province, 2024**



Data source: U.S. Energy Information Administration, World Bank, and Global Energy Monitor, *Global Integrated Power Tracker*, February 2025 release

**Map 3. China's fossil fuel electricity generation capacity by province, 2024**



Data source: U.S. Energy Information Administration, World Bank, and Global Energy Monitor, *Global Integrated Power Tracker*, February 2025 release

**Map 4. China’s renewable generation capacity by province, 2024**



Data source: U.S. Energy Information Administration, World Bank, and Global Energy Monitor, *Global Integrated Power Tracker*, February 2025 release

- As of 2024, China had 57 nuclear power reactors in operation with an installed capacity of 55 GW (Map 5). As of February 2025, 28 nuclear power reactors with a combined 30 GW of capacity were under construction and are scheduled to be operational by 2029. An additional eight reactors with a combined installed capacity of 9 GW are in the early stages of development.<sup>55</sup>

**Map 5. China's nuclear generation capacity by province, 2024**



Data source: U.S. Energy Information Administration, World Bank, International Atomic Energy Agency, *Power Reactor Information System*, and Global Energy Monitor, *Global Integrated Power Tracker*, February 2025 release

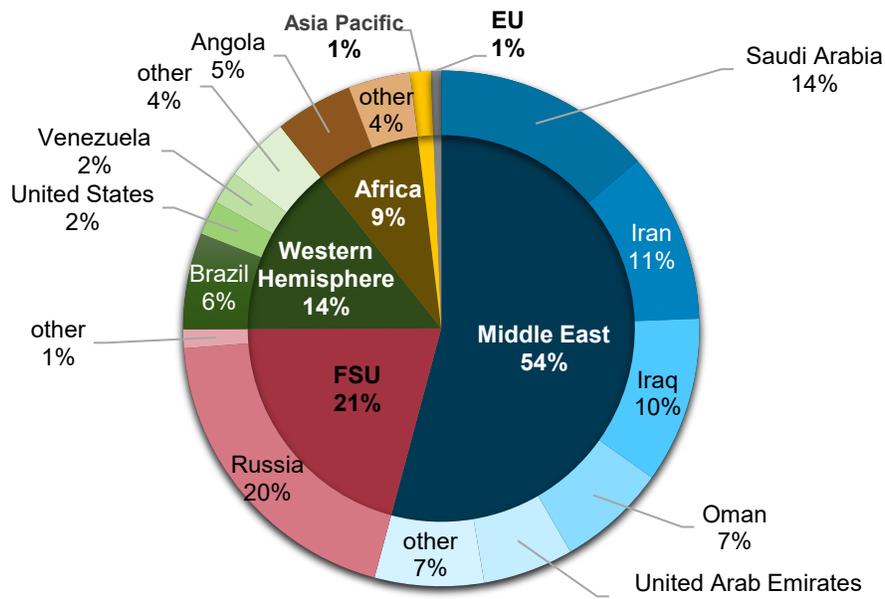
## Energy Trade

### Petroleum and other liquids

- China's crude oil imports decreased by 1.5% in 2024 to 11.1 million barrels per day (b/d) after reaching a high of 11.3 million b/d in 2023. The decrease is the result of a net decline in demand for feedstock from domestic refineries.<sup>56</sup>
- Nearly all of China's crude oil imports arrive via seaborne shipments (92%), and the rest come via pipeline. Most pipeline imports come from Russia via the Eastern Siberia-Pacific Ocean pipeline. The other major import pipelines are the Kazakhstan-China oil pipeline and China-Myanmar pipeline.<sup>57</sup>

- Russia (20%) and Saudi Arabia (14%) were the two top sources for China’s crude oil imports in 2024 (Figure 8).<sup>58</sup> Iran had the largest increase in crude oil exports to China, followed by Iraq and Canada (Figure 9). Approximately 90% of China’s crude oil imports from Iran are taken by independent *teapot* refineries.<sup>59</sup>
- China issued 1.3 billion barrels (3.6 million b/d) of import quotas for non state-owned companies in 2024, approximately 500 million barrels shy of the 1.8 billion barrels cap. Import quotas are traditionally used to manage the flow of foreign crude oil into the country and enable China to manage domestic demand. The import quota for 2025 has increased to 1.9 billion barrels.<sup>60</sup>

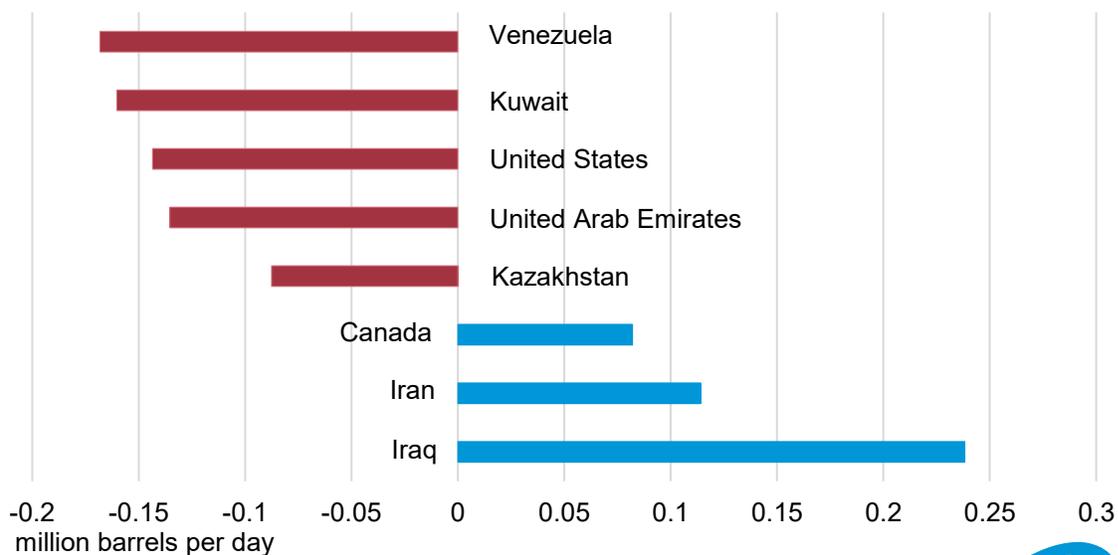
Figure 8. China's crude oil and condensate imports by source, 2024



Data source: U.S. Energy Information Administration, Vortexa, and Global Trade Tracker<sup>60</sup>  
 Note: Numbers may not equal 100% due to independent rounding.



Figure 9. Largest changes in crude oil and condensate imports year on year by source, 2023–2024

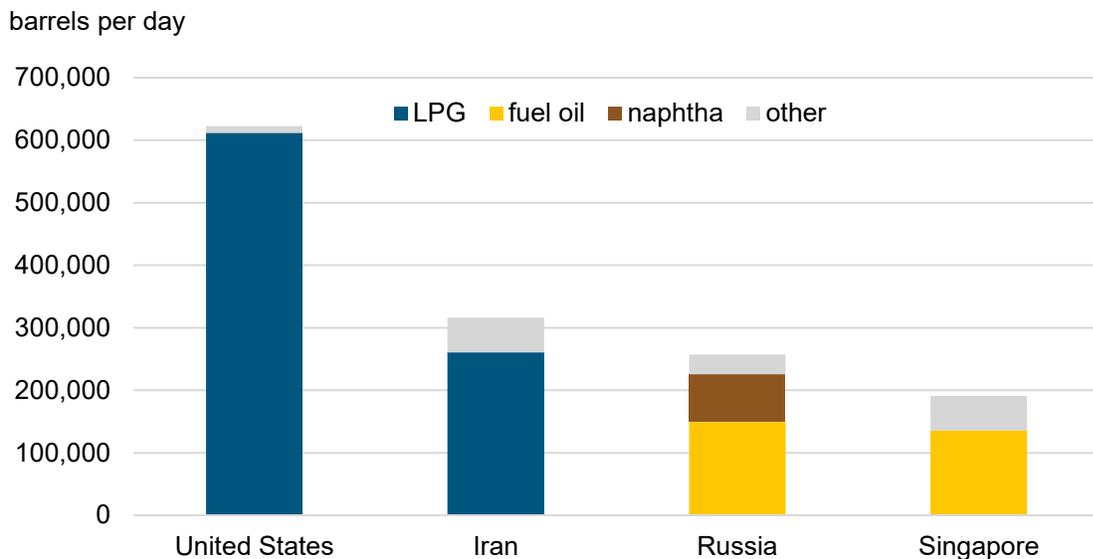


Data source: Vortexa and Global Trade Tracker



- China’s petroleum product imports increased by 6% in 2024 to 2.2 million b/d from the previous year. Liquefied petroleum gas (LPG) (54%) and fuel oil (20%) accounted for most of China’s petroleum product imports (Figure 11).<sup>61</sup>
- The United States and Iran, China’s two top sources for total petroleum product imports, also accounted for most of China’s LPG imports. Russia and Singapore were the third- and fourth-highest sources of total petroleum product imports as well as most of the fuel oil imports in 2024 (Figure 10).<sup>62</sup>

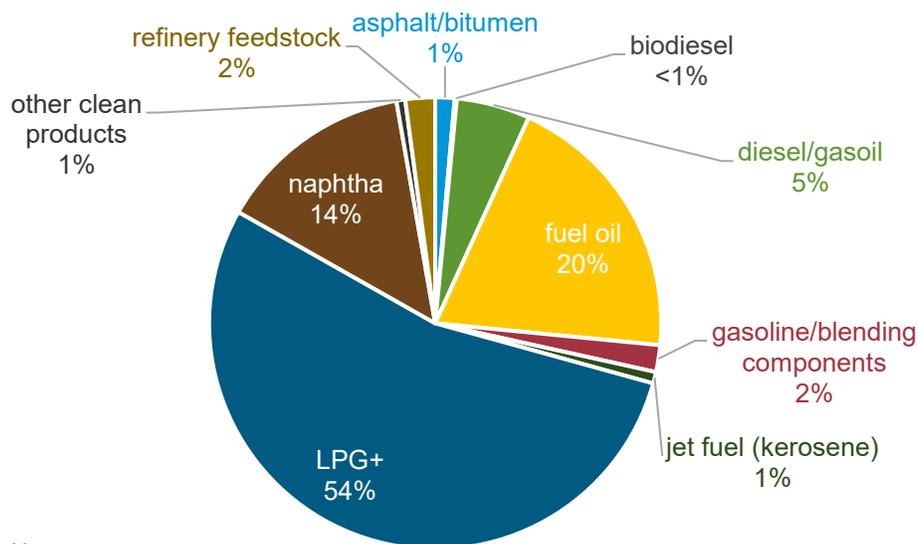
Figure 10. China's largest petroleum product imports by source, 2024



Data source: Vortexa  
 Note: LPG=liquid petroleum gas



Figure 11. China's petroleum products imports by type, 2024



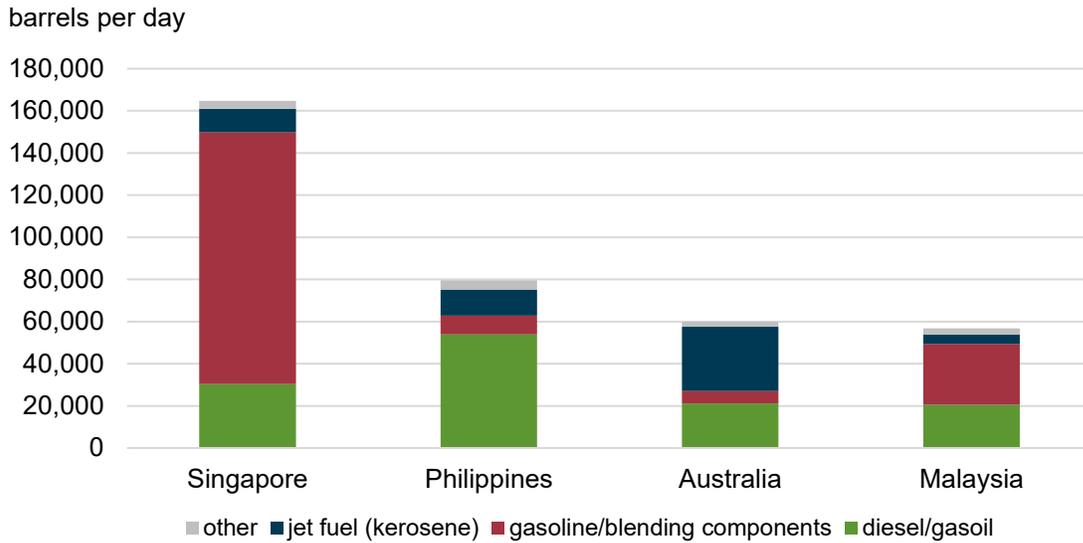
Data source: Vortexa  
 Note: Numbers may not equal 100% due to independent rounding. LPG=liquified petroleum gas



- China's petroleum product exports decreased more than 10% in 2024 from the previous year. Gasoline and blending components (38%), diesel and gasoil (29%), and jet fuel and kerosene (25%) made up most of China's petroleum product exports (Figure 13).<sup>63</sup>

- Singapore, China’s top importer of petroleum product exports in 2024, received about half of gasoline and blending components exports (Figure 12).<sup>64</sup>

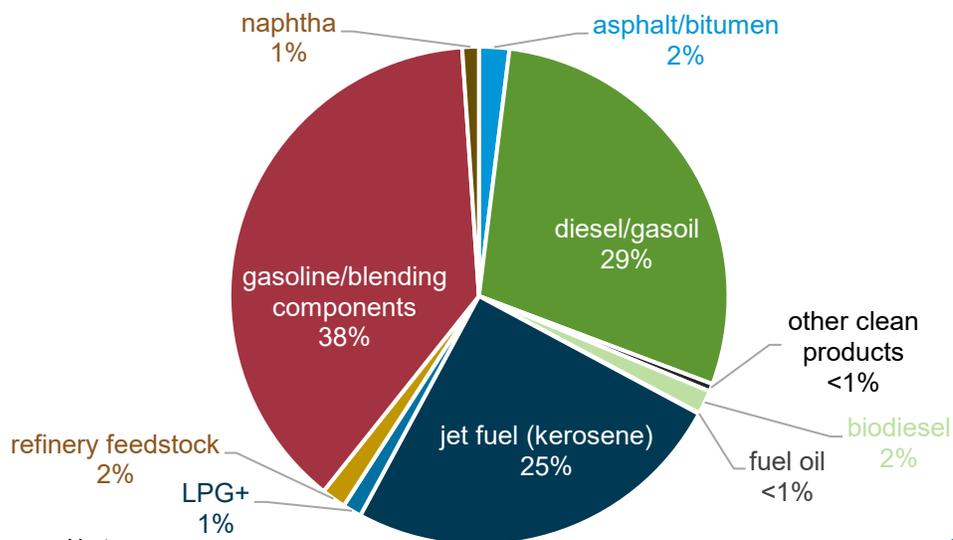
Figure 12. China's largest petroleum product exports by destination, 2024



Data source: Vortexa



Figure 13. China's petroleum product exports by type, 2024



Data source: Vortexa

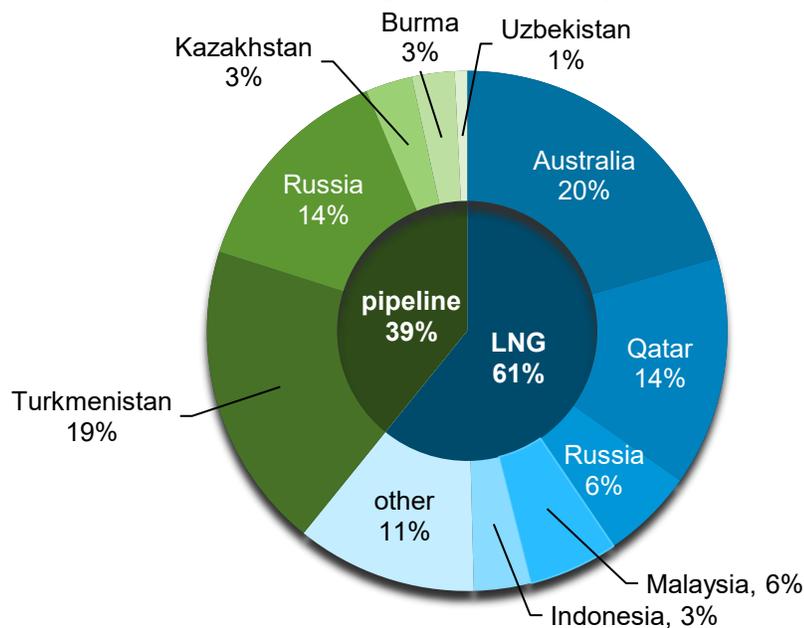
Note: Numbers may not equal 100% due to independent rounding. LPG=liquified petroleum gas



## Natural gas

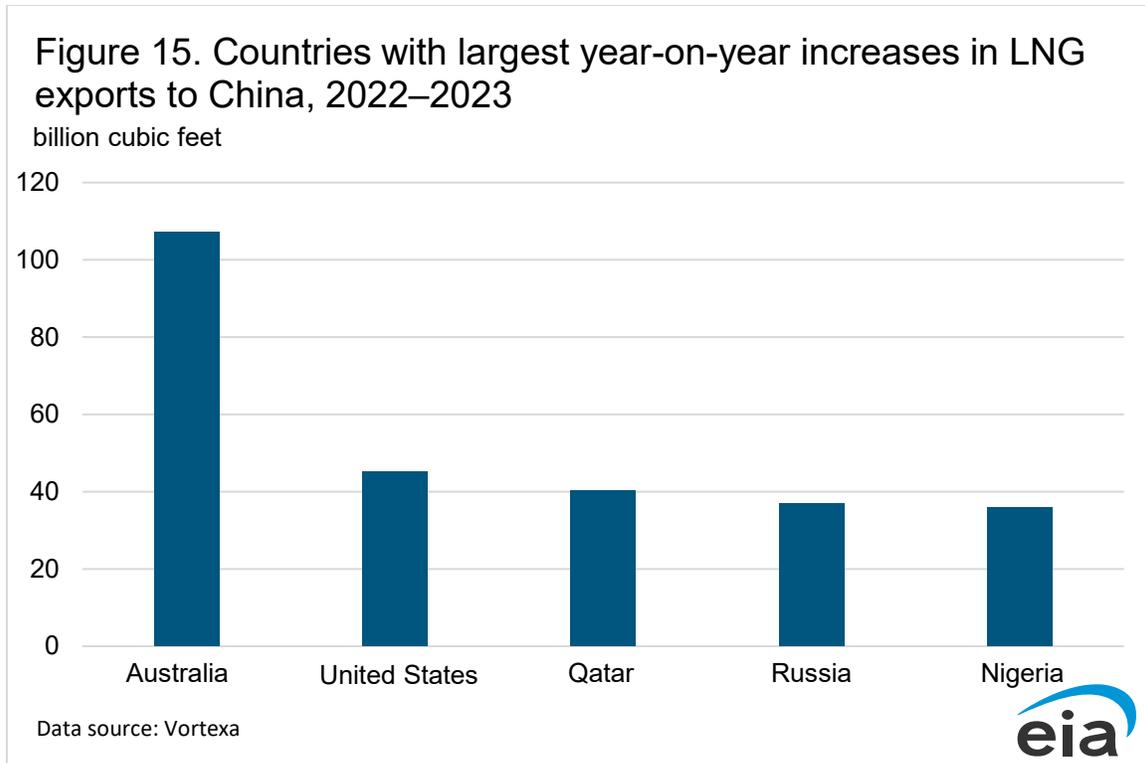
- China was the top global natural gas importer in 2023, with natural gas imports totaling 5.7 Tcf, an 11.3% increase from 2022. Most natural gas imports were from maritime shipments of LNG (61%), and the rest came from pipeline imports (Figure 14).<sup>65</sup>
- LNG imports increased 5.4% to 3.5 Tcf in 2023 from the previous year, and natural gas pipeline imports increased 5.4% to 2.2 Tcf. Australia had the largest increase in LNG exports to China with year-on-year growth of 107 billion cubic feet (Bcf), followed by the United States and Qatar (Figure 16). Russian natural gas via the Power of Siberia 1 pipeline were the main source of the increase in China’s pipeline imports.<sup>66</sup>
- In 2023, Australia surpassed Turkmenistan as China’s top source of natural gas imports. Turkmenistan dropped to second overall but continued to be the top source of pipeline imports. Pipeline imports from Russia grew by 47.1% and LNG imports by 12.8%, making Russia the third-highest source of natural gas imports to China in 2023 (Figure 15).<sup>67</sup>

Figure 14. China's natural gas imports by source, 2023



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

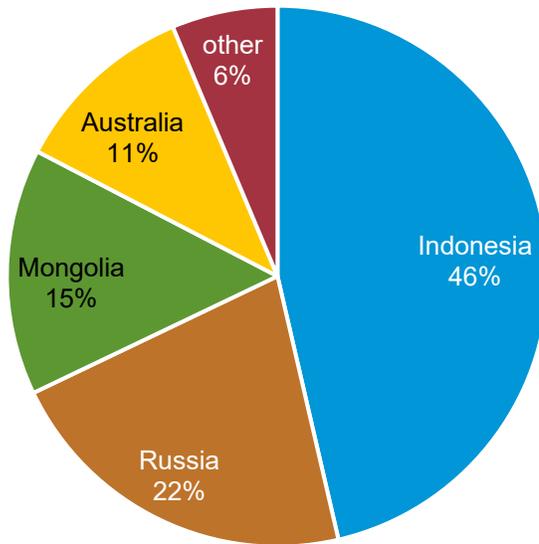




## Coal

- China, the world’s top coal importer, imported 442 million tons in 2023, a 28.0% increase from 345 million short tons in 2022. China imported almost 180 million short tons more than India, the second-highest importer.<sup>68</sup> The increase was the result of lower international coal prices and a decline in the quality of domestic coal.<sup>69</sup>
- Indonesia remained China’s top source of coal imports in 2023. Although its share of China’s coal imports declined to 46% from the previous year, the absolute amount of coal imports from Indonesia increased.<sup>70</sup>

Figure 16. China's coal imports by source, 2023

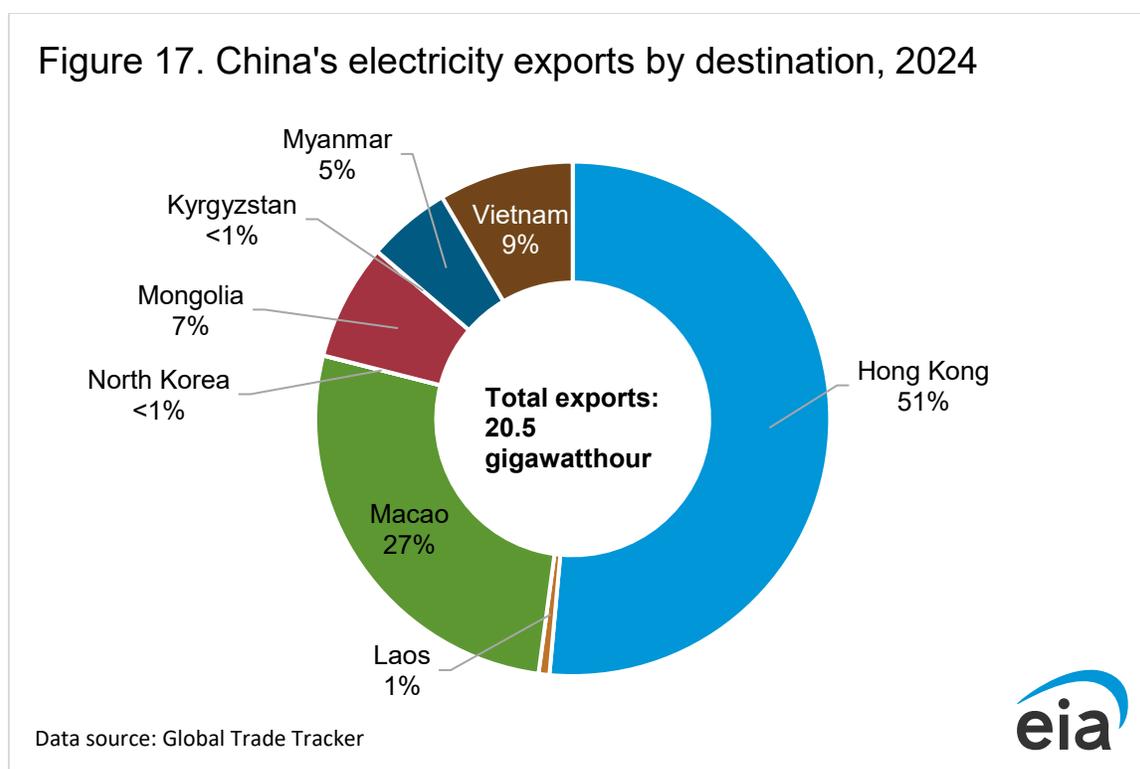


Data source: Global Trade Tracker



### Electricity

- China's electricity generation exports decreased 7.0% in 2024 to 20.5 gigawatthours. The majority of China's exports (78%) go to the Special Administrative Regions of Hong Kong and Macau (Figure 17).<sup>71</sup>



<sup>1</sup> U.S. Energy Information Administration, *International Energy Statistics*.

<sup>2</sup> U.S. Energy Information Administration, *International Energy Statistics*; Soo, Zen. "China's Economy Expands 5% in 2024, Hitting Target Helped by Strong Exports, Stimulus Measures." AP News, January 17, 2025; Feng, Rebecca, and Jason Douglas. "How Bad Is China's Economy? The Data Needed to Answer Is Vanishing." mint, May 5, 2025.

<sup>3</sup> U.S. Energy Information Administration, *International Energy Statistics*.

<sup>4</sup> U.S. Energy Information Administration, *International Energy Statistics*.

<sup>5</sup> U.S. Energy Information Administration, *International Energy Statistics*; Qin, Qi, and Christine Shearer. "When Coal Won't Step aside: The Challenge of Scaling Clean Energy in China." Centre for Research on Energy and Clean Air, February 26, 2025.

<sup>6</sup> Zhang, Yinxing. "China's EV Market Set to Maintain Soaring Momentum." Energy Intelligence, March 19, 2025.

<sup>7</sup> U.S. Energy Information Administration, *International Energy Statistics*; Zhou, Oceana. "China Data: 2024 Crude Throughput Falls 2% to 14.19 Mil b/d; GDP Grows 5%." S&P Global Commodity Insights, January 17, 2025.

<sup>8</sup> U.S. Energy Information Administration, *International Energy Statistics* and estimates.

<sup>9</sup> Aizhu, Chen. "China Asks State Firms to Add 60 Mln Barrels of Oil to Reserves, Vortexa and Sources Say." Reuters, July 4, 2024.

<sup>10</sup> CNOOC Limited, "2024 Strategy Preview," January 22, 2025, page 11-14, and 21.

<sup>11</sup> "Petrochina Reports Record 2024 Net Income on Higher Production." Reuters, March 30, 2025.

<sup>12</sup> Maryelle Demongeot, "China's Oil Demand Growth Slows in 2024," Energy Intelligence, February 19, 2025

<sup>13</sup> Cao, Ella, and Colleen Howe. "China's oil consumption to peak by 2027, says top Refiner Sinopec," Reuters, December 19, 2024.

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