

Country Analysis Brief: India

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Overview

Table 1. India energy indicators, 2023

	Petroleum and other liquids	Natural gas	Coal	Nuclear	Hydro	Other renewables	Total
Primary energy production (quads)	1.4	1.3	16.6	0.6		1.5	21.5
Primary energy production (percentage)	7%	6%	78%	2%		7%	100%
Primary energy consumption (quads)	10.5	2.3	21.2	0.6		1.6	36.2
Primary energy consumption (percentage)	29%	6%	59%	2%	0%	4%	100%
Generation (billion kWh)	6.4	67.6	1,285.8	48.2	147.9	246.3	1,802.2
Generation (percentage)	<1%	4%	71%	3%	8%	14%	100%

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

Note: Total may not equal 100% due to independent rounding. Quads=quadrillion British thermal units. kWh=kilowatthours

- India was the third highest energy consumer in the world in 2023 behind China and the United States.¹ In 2023, India passed China to become the world's most populous country in the world, with 1.44 billion people. Its gross domestic product (GDP) grew 7.8% in 2023 from the previous year. India has one of the fastest-growing economies and the fourth-largest economy in the world.²
- In 2023, India was the third-highest consumer of petroleum and other liquids, behind the United States and China. The country was ranked 12th as a consumer of natural gas, consuming 2.2 trillion cubic feet (Tcf) in 2023, and was the 4th largest importer of liquefied natural gas (LNG).³
- India's National Electricity Plan (NEP) 2023 focuses on expanding India's transmission network to accommodate an estimated peak demand of 458 gigawatts (GW) by 2032. The country's Central Electricity Authority assessed that India's installed renewable energy capacity will reach approximately 55% of total installed generation capacity by fiscal year (FY) 2026 and 66% by FY 2031, from 36% in 2023.⁴ The fiscal year starts on April 1 and ends on March 31.



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

Petroleum and Other Liquids

Map 2. India's onshore oil production by state, 2023



Data source: U.S. Energy Information Administration, International Energy Statistics, World Bank, and National Energy Technology Laboratory, Global Oil & Gas Infrastructure Database Note: b/d=barrels per day

- India's petroleum and other liquids production remained flat at 939,000 barrels per day (b/d), in 2023 (Figure 1). However, crude oil and condensate production dropped to 604,000 b/d that year, the lowest since 1993.⁵ The decline in production is mainly attributed to weather-related disruptions and maturing fields.⁶
- In 2023, India produced 294,000 b/d of crude oil from onshore fields (Map 2) and another 298,000 b/d from offshore fields.⁷ National oil companies (NOC) produced most of the oil (78%) in 2023. Joint venture and private companies are responsible for the other 22% of India's production.⁸
- Consumption of petroleum and other liquids has grown every year since 2020 to 5.3 million b/d in 2023 (Figure 1). It grew to a high of 5.5 million b/d in 2024 and we expect consumption to grow by 6% in 2025.⁹
- As of 2023, India had 20,873 miles of petroleum product pipelines. During FY 2022, the pipeline utilization rate was about 63%.¹⁰
- India's recoverable oil reserves in 2023 were 4.9 billion barrels. India's reserves were primarily onshore (61.3% onshore and 38.7% offshore).¹¹



- India's refined petroleum product production increased 4.8% to 266.5 million metric tons in FY 2022 from the previous fiscal year. Diesel (42.9%) and gasoline (16.1%) accounted for almost half of the petroleum products produced.¹²
- In 2023, India's petroleum and other liquids consumption grew by 4.4%. Rising demand for gasoline, diesel, and jet fuel, all of which have been growing since 2020, were the primary drivers behind this growth (Figure 2).¹³



- India has the second-most refining capacity in Asia, with a total nameplate refining capacity of just under 5.2 million b/d in 2024 (Table 2).¹⁴ By 2028, we <u>estimate</u> another 0.5 million b/d to 2.4 million b/d of capacity could be online.¹⁵
- During FY 2022, India's crude oil processing increased 5.6% to 5.1 million b/d from the previous year's 4.9 million b/d. During that same period, production of refined petroleum products increased 4.8%.¹⁶
- India has several refinery projects slated to come online by 2030 that will add 808,000 b/d of capacity. The largest is in Panipat (200,000 b/d), followed by Nagapattinam (182,000 b/d) and Barmer (181,000 b/d).¹⁷

Refinery location	Name of company	Crude oil refining capacity (thousand barrels per day)
Jamnagar SEZ	Reliance Industries	711
Jamnagar DTA	Reliance Industries	666
Vadinar	Nayara Energy	404
Kochi (Cochin)	Bharat Petroleum Corp.	312
Mangalore	Mangalore Refinery and Petrochemicals Ltd.	303
Panipat	Indian Oil Corporation Ltd.	301
Visakhapatnam	Hindustan Petroleum Corp.	300
Paradip	Indian Oil Corporation Ltd.	300

Table 2. Refineries in India

Total		5,198
Tatipake	Oil and Natural Gas Corp.	2
Digboi	Indian Oil Corporation Ltd.	13
Guwahati	Indian Oil Corporation Ltd.	24
Bongaigaon	Indian Oil Corporation Ltd.	54
Numaligarh	Numaligarh Refinery Ltd.	60
Barauni	Indian Oil Corporation Ltd.	121
Bina	Bharat Petroleum Corp.	160
Mathura	Indian Oil Corporation Ltd.	160
Haldia	Indian Oil Corporation Ltd.	162
Mumbai	Hindustan Petroleum Corp.	190
Manali	Chennai Petroleum Corp.	212
Bhatinda	Hindustan Mittal Energy Ltd.	225
Mumbai	Bharat Petroleum Corp.	241
Koyali, Gujarat	Indian Oil Corporation Ltd.	277

Data source: FACTS Global Energy, Asia Pacific Databook 2: Refinery Configuration, Fall 2024

- India's government has focused on increasing total petroleum storage capacity to the minimum 90 days of net imports recommended by the International Energy Agency. Total capacity, which includes strategic petroleum reserves (SPR) and refinery inventories, was at 74 days at the end of 2023. India's current plans to increase capacity include adding three SPR locations with a combined capacity of 39 million barrels and expanding two SPR locations that will add another 48 million barrels of capacity.¹⁸
- As of 2023, India had 6,475 miles of crude oil pipelines. The pipeline network had a capacity utilization of about 73% (3 million b/d).¹⁹ Several crude oil pipelines are under construction to help facilitate the expansion of refinery capacity, such as the:
 - Paradip Numaligarh Crude Pipeline—a 1,013-mile pipeline that will connect the states of Assam and Odisha.²⁰
 - New Mundra Panaipat Pipeline Project—a 742-mile pipeline that will run from Gujarat to Haryana.²¹

Natural Gas



Map 3. India's onshore natural gas production by state, 2023

Data source: U.S. Energy Information Administration, India's Ministry of Petroleum and Natural Gas, Indian Petroleum and Natural Gas Statistics 2022–2023, World Bank, and the National Energy Technology Laboratory, Global Oil & Gas Infrastructure Database

- Natural gas production in India increased 5.1% in 2023 from the previous year, marking the third straight year of continuous growth (Figure 3). Production reached over 1.2 Tcf in 2023, the highest since 2012.²²
- In India's FY 2022, most natural gas production came from offshore fields (68% offshore and 32% onshore). Assam was the highest-producing state for onshore natural gas, accounting for almost one-third of total onshore natural gas production, followed by Rajasthan (Map 3).²³
- India had 40.3 Tcf of recoverable natural gas reserves in 2023. The reserves are split nearly evenly between offshore (53.4%) and onshore (46.6%) fields.²⁴



- India adjusted the pricing policy on natural gas from conventional fields operated by stateowned entities (SOE) in early 2023. The natural gas from these fields are priced at 10% of the monthly weighted average of sweet and sour crude oil prices, with a floor price of \$4 per million British thermal units (MMBtu) and a ceiling price of \$6.50/MMBtu. The policy's goal is to lower domestic natural gas prices, which reached \$9.16/MMBtu in April 2023, a more than 50% increase from the prior year.²⁵
- India is investing in coal gasification, which has been described as a potentially cleaner way to
 utilize its large domestic coal deposits. Currently, the two approved coal gasification projects are
 a coal-to-synthetic-natural-gas project and a coal-to-ammonium-nitrate project. A pilot project
 for underground coal gasification was also started in June 2024.²⁶
- The industrial sector has consistently been the top natural gas consumer, accounting for 67% of total consumption in 2023 (Figure 4).²⁷ This large share is mainly due to India's fertilizer industry, which grew by almost 10% from the previous fiscal year and accounted for 33% of all-natural gas consumption in FY 2022.²⁸



- In 2023, India had 14,400 miles of operational natural gas pipelines, with an additional 7,585 miles of pipeline in various stages of development.²⁹ Some of the larger natural gas pipeline projects under development are the:
 - Urja Ganga pipeline—a 2,054-mile pipeline with a completion date of March 2025³⁰
 - Jagdishpur-Haldia Phase II—a 1,181-mile pipeline with a completion data of 2028³¹
- India's regasification capacity of 2.1 Tcf (Table 3) was the fifth highest globally in 2023. The terminals had a regasification utilization rate of 49% for that year. With nine projects under development, India's regasification capacity rate could reach close to 4.0 Tcf by the end of 2026.³²

Project name	Owners	Peak output (billion cubic feet per year)	Target start year	
Existing LNG termin	als			
Dahej	Petronet (100%)	840	Operational	
Hazira	Shell	240	Operational	
Kochi	Petronet	240	Operational	
Ennore	Indian Oil Company (95%), Tamil Nadu Industrial Development Corporation	240	Operational	
Mundra	Gujarat State Petroleum Corporation (50%), Adani Group (50%)	240	Operational	
Dharma	Adani Group (50%), Total (50%)	240	Operational	
Ratnagiri (Dabhol)	GAIL (31.52%), NTPC (31.52%), MSEB Holding (16.68%), other smaller companies (20.28%)	96	Operational	
Total		2,136		
Projects under cons	truction			
Dabhol LNG 2	GAIL (32%), NTPC (32%), MSEB Holding (17%), Indian Financial Institutions (20%)	240	2025	
Dabhol LNG Breakwater	GAIL (32%), NTPC (32%), MSEB Holding (17%), Indian Financial Institutions (20%)	144	2025	
Dahej - Phase I expansion	Petronet (100%)	120	2025	
Jaigarh ¹	Hiranandani Group (100%)	288	2025	
Karaikal Port	AG&P (100%)	240	2025	
Chhara	Hindustan Petroleum Corp Ltd (50%), Shapoorji Pallonji (50%)	240	2026	
Jafrabad LNG ¹	Swan Energy (32%), Indian Farmers Fertiliser Cooperative Limited (31%), Mitsui Group (11%), Gujarat Maritime Board (15%), Gujarat State Petronet (11%)	240	2026	
Dahej - Phase II expansion	Petronet (100%)	120	2026	
Andhra Pradesh	H-Energy (100%)	192	2026	
Total		1,824		

Table 3. India's existing and planned regasification terminals

Data source: International Gas Union, 2024 World LNG Report

Note: LNG=liquefied natural gas

¹ Floating storage regasification unit that receives and converts the LNG offshore

Coal

• India's coal production has been increasing since 2021 and reached 1.1 billion short tons in 2023, a 12.2% increase from 2022.³³ India's Ministry of Coal attributes the production increase to sustained investment in the industry and using more modern technology.³⁴

 SOE Coal India Limited contributed 79% of coal production in FY 2022. SOE Singareni Collieries Company Limited, the top coal supplier for India's southern region, accounted for 8% of production during the same period.³⁵



- Coal consumption in India increased 12.6% to almost 1.3 billion short tons in 2023.³⁶ Strong economic growth led to increased electricity demand, which is primarily served by coal-fired generation. Higher electricity demand, increased cement and steel production for infrastructure projects, warmer temperatures, and decreased hydropower generation were some of the main drivers in India's increased coal consumption in 2023.³⁷
- Coal consumption in India is primarily for power generation, accounting for 74.0% of all coal demand. The remaining shares are for nonpower uses, such as the steel, iron, and cement industries.³⁸

Electricity

Both its federal and state governments oversee India's electric power sector. The Ministry of
Power is responsible for developing national power policies for electricity generation,
transmission, and distribution and for supervising the Central Electricity Regulatory Commission
and the interregional grid system operator. State governments are responsible for policies that
address the specific needs and challenges of their state in terms of how the electric power

sector is managed. Each state has its own State Electricity Regulatory Commission that governs the power industry within its borders, including setting rates and ensuring system reliability.³⁹

- India's electricity generation increased 2.4% in 2023, reaching a new high of 1,805 tera watthours (TWh). More than three-quarters of total electricity generation was from fossil fuels, and coal was the largest fuel source for generation overall (71.3%) (Figure 6). However, coal's share of generation has decreased for the past two years despite coal's absolute TWh of generation increasing in both years.⁴⁰
- Non-hydroelectric renewables share of total generation has been growing. Solar (6.6% in 2023) and wind (5.2%) have been offsetting the coal and hydroelectricity declines.⁴¹







Data source: U.S. Energy Information Administration, India's Ministry of Power—Central Electricity Authority, and World Bank

Note: States that were too small due to the resolution of the map were excluded. GW=gigawatts

- India's installed generation capacity in 2023 was 500 GW, a 2.6% increase from the previous year. Virtually all of that increase was renewable energy, with 10 GW of solar and 3 GW of wind capacity added that year.⁴²
- In 2023, close to half of all installed generation capacity was located on the western part of the country (Map 4). Gujarat, Maharashtra, Rajasthan, and Karnataka accounted for more than 40% of total installed generation capacity.⁴³
- Maharashtra, Gujarat, and Uttar Pradesh had the most installed fossil fuel-fired generation capacity (Map 5) in 2023. Most of the capacity (85%) was coal-fired, and the remainder was mostly natural gas-fired.⁴⁴
- In 2023, Rajasthan, Karnataka, Gujarat, and Tamil Nadu had the most installed renewable energy generation capacity (Map 6) of all India's states. Combined, they had over 20 GW of capacity and accounted for one-half of India's total installed capacity from renewable sources.⁴⁵ Rajasthan has the highest potential (20.3%) for renewable energy of any state in India.⁴⁶ Karnataka, Gujarat, and Tamil Nadu all have favorable renewable energy resources and have state policies that have helped capacity growth.⁴⁷





Data source: U.S. Energy Information Administration, India's Ministry of Power—Central Electricity Authority, and World Bank

Note: States that were too small due to the resolution of the map were excluded. Fossil fuel capacity consists of coal, oil, and natural gas.GW=gigawatts





Data source: U.S. Energy Information Administration, India's Ministry of Power—Central Electricity Authority, and World Bank

Note: States that were too small due to the resolution of the map were excluded. Renewable capacity consists of hydroelectric, biomass and waste, wind, and solar. GW=gigawatts

- Seven nuclear reactors are under development in India that will add just under 6 GW of nuclear capacity (Table 4). All the reactors, other than Prototype Fast Breeder Reactor, are planned to be operational by 2027.⁴⁸ However, Kudankulam 3 and 4 were originally slated to come online in 2023, but as of January 2025, are still not fully operational.⁴⁹ The four Kudankulam are Russian-designed reactors, and the other three are domestic designs. The drivers of India's growth in nuclear generation capacity include strong expected growth in electricity demand, net zero ambitions by 2070, and a desire to capitalize on indigenous uranium reserves. Recoverable uranium resources were estimated at 220,900 metric tons in 2021.⁵⁰
- As of 2024, India has 27 hydroelectric power projects under construction that are slated to come online by 2032. The 27 projects will add an additional 17.5 GW of installed capacity once completed.⁵¹



Table 4. Nuclear	r reactors under	construction
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Reactor name	Reactor type	Capacity (megawatts)
Kudankulam 3	Pressurized water reactor	1,000
Kudankulam 4	Pressurized water reactor	1,000
Kudankulam 5	Pressurized water reactor	1,000
Kudankulam 6	Pressurized water reactor	1,000
Rajasthan 7	Pressurized heavy water reactor	700
Rajasthan 8	Pressurized heavy water reactor	700
PFBR	Fast reactor	500
Total		5,900

Data source: World Nuclear Association

Energy Trade

Petroleum and other liquids

- India imported 4.5 million b/d of crude oil and condensate in 2023, reaching a new high and making the country the second-highest net crude oil and condensate importer in the world. India's crude oil and condensate imports have been increasing since 2021 and grew by 2.4% in 2023.⁵²
- Russia was the primary source of India's crude oil and condensate imports in 2023, accounting for about 39% of the total (Figure 8). In 2021 (before Russia's full-scale invasion of Ukraine), Russia was exporting just under 100,000 b/d to India, for a 2.5% share of total imports. In 2022,

after the United States and EU imposed sanctions on <u>Russia</u>, India began purchasing Russia's crude oil at a discount, increasing its imports more than six-fold to 740,000 b/d.⁵³ In 2023, crude oil imports from Russia increased more than doubled to almost 1.8 million b/d.⁵⁴ Increases in imports from Russia displaced crude oil imports from other trading partners.

Most of the rest of crude oil imports came from countries in the Middle East, which accounted for about 45% of total imports in 2023, or 2 million b/d. However, the total amount India imported from the Middle East decreased by almost 600,000 b/d from the previous year. Imports from the United States also decreased by 95,000 b/d (-32.7%) from 2022.⁵⁵



Figure 8. India's crude oil and condensate imports by origin,

- India's petroleum product imports grew 8% in 2023 from the previous year to 1.1 million b/d. Liquefied petroleum gas (69%), fuel oil (17%), and naphtha (6%) accounted for most petroleum product imports.⁵⁶
- Unlike crude oil and condensate imports, petroleum product import sources were more diverse. The United Arab Emirates had the highest share, at 23%, in 2023, and the Middle East as a region accounted for 68% of all petroleum product imports.⁵⁷
- Transportation fuels accounted for most (84%) of India's petroleum product exports (Figure 9). The largest share of exports by destination region was Asia Pacific, which received 28% of exports in 2023. However, the largest share of exports by destination country was the United Arab Emirates at 10%.⁵⁸



Natural gas

- India imported the fourth most LNG volumes in the world in 2023 (5%), behind China (18%), Japan (16%), and South Korea (11%).⁵⁹ India imported 1.1 Tcf of LNG in 2023, a 9.2% increase from 2020.⁶⁰
- The Middle East was the source of 66.3% of India's LNG imports (0.7 Tcf) in 2023 (Figure 10).
 LNG imports from Qatar in 2023 increased by 3.8% year on year. Meanwhile, the United States'
 LNG exports to India grew by more than 42 billion cubic feet (Bcf) in 2023 to 164 Bcf.⁶¹



Coal

- India's coal imports grew by 14.2% in 2023 from the previous year to 264 million short tons. The Asia Pacific region was the source of 64.5% of all coal imports, with Indonesia (41.8%) and Australia (18.4%) supplying most coal in 2023 (Figure 11).⁶²
- Despite an increase in overall coal imports, imports from India's two top source countries— Indonesia (-2.0%) and Australia (-5.0%)—declined year over year. The largest increases of coal imports by weight in 2023 came from the United States (increase of 7.7 million short tons), South Africa (7.5 million short tons), and Russia (5.8 million short tons).⁶³



¹ Energy Institute, 2024 Statistical Review of World Energy, page 12.

⁷ U.S. Energy Information Administration, International Energy Statistics.

⁸ India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 18.

⁹ U.S. Energy Information Administration, *Short-Term Energy Outlook*, January 2025.

¹⁰ India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 40.

¹¹ India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 18.

¹² India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 40.

¹³ FACTS Global Energy, Asia Pacific Petroleum Databook 1: Supply and Demand, Spring 2024, page 20.

¹⁴ FACTS Global Energy, *Asia Pacific Petroleum Databook 2: Refinery Configuration and Construction*, Spring 2024, page 24; India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 5.

¹⁵ U.S. Energy Information Administration, *Outlook on global refining to 2028*, page 14.

¹⁶ India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 40.

² U.S. Energy Information Administration, International Energy Statistics.

³ U.S. Energy Information Administration, *Short-Term Energy Outlook*, October 2024, and International Energy Statistics and estimates.

⁴ "India Sets a US\$ 109.50 Billion (Rs. 9.15 Lakh Crore) Blueprint for Power Sector to Meet 458 GW Demand by 2032: IBEF." India Brand Equity Foundation, September 26, 2024; Pandey, Kundan. "India's Renewable Capacity Estimated to Increase, While Reliance on Coal to Continue, Indicates National Electricity Plan." Mongabay, June 20, 2023.

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

⁶ FACTS Global Energy, Asia Pacific Petroleum Databook 1: Supply and Demand, Spring 2024, page 36.

¹⁷ FACTS Global Energy, Asia Pacific Petroleum Databook 2: Refinery Configuration, Fall 2024

¹⁸ "India to Prioritize Expansion of Oil Storage Capacity - Times of India." The Times of India, January 4, 2024.

¹⁹ India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 40.

²⁰ "<u>Paradip Numaligarh Crude Pipeline (PNCPL)</u>." Vajiram & Ravi - IAS Study Center, October 25, 2021.

²¹ "Land Acquisition Process Begins to Lay Crude Oil Pipeline under Mundra-Panipat Project." ThePrint, September 13, 2022; "New Mundra–Panipat Oil Pipeline." Global Energy Monitor, January 9, 2024.

²² U.S. Energy Information Administration, International Energy Statistics and estimates.

²³ India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 33.

²⁴ India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 18.

²⁵ FACTS Global Energy, *India Natural Gas Outlook*, September 2024, page 8; India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 77.
 ²⁶ FACTS Global Energy, *India Natural Gas Outlook*, September 2024, page 8 and 10.

²⁷ U.S. Energy Information Administration, International Energy Statistics; FACTS Global Energy, *India Natural Gas Outlook*, September 2024, page 8.

²⁸ Madhumitha Jaganmohan, "<u>Topic: Fertilizer Industry in India</u>," Statista, January 2, 2024; India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 102.

²⁹ India Ministry of Petroleum and Natural Gas Economic & Statistics Division, *Indian Petroleum & Natural Gas Statistics 2022-23*, page 40.

³⁰ "<u>Gail's Urja Ganga Gas Pipeline Project Completion Delayed until March 2025</u>." Business Standard, June 30, 2024.

³¹ Stagg, Isabel. "<u>GlobalData: India to Lead Asia's Pipeline Transmission Projects Count</u>." World Pipelines, May 16, 2024.

³² International Gas Union, 2024 World LNG Report, page 38.

³³ U.S. Energy Information Administration, International Energy Statistics and estimates.

³⁴ Ministry of Coal, Government of India, <u>Coal Production</u>. Accessed October 9, 2024.

³⁵ Ministry of Coal, Government of India, <u>Coal Production</u>. Accessed October 9, 2024.

³⁶ U.S. Energy Information Administration, International Energy Statistics and estimates.

³⁷ "Consumption of Coal and Lignite: World Coal Consumption." Enerdata. Accessed October 9, 2024; IEA.

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³⁸ IEA. "<u>Coal 2023 – Analysis</u>." IEA, December 2023, page 26.

³⁹ 1. B.V. Surya Vardhan et al., "<u>An Overview of Indian Power Sector and Its Energy Management</u>," *Renewable Energy Focus* 50 (September 2024): 100597.

⁴⁰ U.S. Energy Information Administration, International Energy Statistics and estimates.

⁴¹ U.S. Energy Information Administration, International Energy Statistics and estimates.

⁴² U.S. Energy Information Administration, International Energy Statistics and estimates.

⁴³ India Ministry of Power Central Electricity Authority, *CEA Annual Report 2022-2023*, pages 279–288.

⁴⁴ India Ministry of Power Central Electricity Authority, *CEA Annual Report 2022-2023*, pages 279–288.

⁴⁵ India Ministry of Power Central Electricity Authority, *CEA Annual Report 2022-2023*, pages 279–288.

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⁵⁰ "<u>Nuclear Energy Agency (NEA) - Uranium 2022: Resources, Production and Demand</u>," Nuclear Energy Agency, 2023; "<u>Nuclear Power in India</u>." World Nuclear Association. Accessed November 18, 2024: Ashley J Tellis,
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⁵³ Williams, Curtis. "India Plans to Keep Buying Cheap Russian Oil, Oil Minister Says | Reuters." Reuters, September

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⁵⁴ Vortexa (accessed September 2024)

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⁵⁶ Vortexa (accessed September 2024)

⁵⁷ Vortexa (accessed September 2024)

⁵⁸ Vortexa (accessed September 2024)

⁵⁹ International Gas Union, 2024 World LNG Report, page 27.

⁶⁰ Vortexa (accessed October 2024)

⁶¹"<u>U.S. Natural Gas Imports and Exports Monthly August 2024</u>." U.S. Department of Energy, August 2024, page 10; Vortexa (accessed October 2024)

⁶² U.S. Energy Information Administration, International Energy Statistics and estimates, Global Trade Tracker (September 2024)

⁶³ Global Trade Tracker (accessed September 2024)