



# MONTHLY CHINA ENERGY UPDATE | Hydropower Generation Recovered, Driving Down Thermal Power Demand

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## NEWLY INSTALLED CAPACITY

Figure 1. New Capacity Installed in China in Jan-Sep 2024

		Jan-Sep 2024	Share of new adds (%)	Change (yoy %)	Sep-24	Share of new adds (%)
Thermal Power	GW	33.4	14%	-15%	4.8	15%
Hydropower	GW	8.0	3%	1%	1.4	4%
Nuclear Power	GW	1.2	0%	0%	0.0	0%
Wind Power	GW	39.1	16%	17%	5.5	17%
Solar Power	GW	160.9	66%	25%	20.9	64%
<b>Total capacity added</b>	<b>GW</b>	<b>242.6</b>	<b>100%</b>	<b>15%</b>	<b>32.6</b>	<b>100%</b>
Renewable Energy adds	GW	208.0	86%	22%	27.8	85%
Zero Emissions Capacity Adds	GW	209.2	86%	22%	27.8	85%
Investment in Completed Power Grid Project	1 billion yuan	398.2		21%	144.2	

Source: NEA, CEF Estimates

During the first 9 months of 2024, China added a total of 242.6GW of new capacity, a 15% y-o-y increase. Among which, 86% is new zero-emissions capacity, +22% y-o-y. September alone saw China add 32.6GW capacity addition.

From January to September, China has invested RMB398bn (US\$55bn) in power grid projects, a 21% y-o-y increase. September saw China invest RMB144bn (US\$15.8bn) in power grid expansion projects.

From January to September, 160.9GW of solar capacity was added to the grid, accounting for 66% of the total new capacity, a 25% y-o-y increase.

During the same period, China added a total of 39.1GW of wind new capacity, taking up 16% of the total new capacity added, a 17% y-o-y increase.

8GW of new hydropower capacity was added from January to September 2024, 3% of the total newly added capacity, +1% y-o-y. 1.2GW of nuclear power capacity was added during the first 9 months of 2024, September saw no new addition in nuclear power capacity.

From January to September, China still added 33.4GW of thermal power capacity, taking up 14% of the total newly installed capacity, a 15% y-o-y decrease. Thermal power capacity addition saw a surge in September alone, 4.8GW of new thermal capacity was added, a 15% y-o-y increase.

## INSTALLED CAPACITY

**Figure 2. National Installed Capacity as of Sep 2024**

		Sep-24	Share of Capacity	Change (yoy %)	Sep-23
Thermal Power	GW	1,419	45%	3.3%	1,373
Hydro Power	GW	431	14%	2.6%	419
Nuclear Power	GW	58	2%	2.3%	57
Wind Power	GW	480	15%	19.8%	400
Solar Power	GW	773	24%	48.3%	521
<b>Total of Installed Capacity</b>	<b>GW</b>	<b>3,160</b>	<b>100%</b>	<b>13.2%</b>	<b>2,791</b>
Renewable Energy Capacity	GW	1,683	53%	25.5%	1,341
Zero Emissions Capacity	GW	1,741	55%	22.7%	1,419

*Source: NEA, CEF Estimates*

As of the end of September 2024, China has a total capacity of 3,160GW, +13.2% y-o-y.

The total installed solar capacity reached 773GW, accounting for 24% of the total installed capacity, a 48.3% y-o-y increase.

By the end of September, China has installed total wind capacity of 480GW, taking up 15% of the total, a 19.8% y-o-y increase.

Hydropower reached a total installed capacity of 431GW, 14% of the country's total installed capacity, +2.6% y-o-y.

The total installed nuclear capacity reached 58GW, only +1GW compared to the end of September in 2023. It only takes up 2% of the total installed capacity, a 2.3% y-o-y increase.

The total installed thermal capacity reached 1,419GW, a 3.3% y-o-y increase. It accounts for 45% of the total installed capacity as of the end of September in 2024, a decline compared to 49.2% by the end of [September 2023](#).

## ELECTRICITY GENERATION MIX

China's total electricity demand shows an overall 6.1% increase from January to September 2024, reaching 7,213TWh. In September alone China's electricity demand reached 837TWh, +8.9% y-o-y. Of this 38% of the generation comes from zero emissions power, +12.9% y-o-y.

Figure 3. China's Electricity Generation Mix in Jan-Sep 2024<sup>1</sup>

		Jan-Sep 2024	Share of Generation Jan-Sep	Change (y-o-y %)	Sep-24	Change (y-o-y %)
<b>Thermal Power</b>	TWh	4,618	64%	2.4%	532	9.6%
Coal	TWh	4,393	61%	2.4%	506	9.6%
Gas	TWh	212	3%	2.4%	24	9.6%
Other Thermal	TWh	13	0%	2.4%	1	9.0%
<b>Bioenergy</b>	<b>TWh</b>	<b>145</b>	<b>2%</b>	<b>2.4%</b>	<b>17</b>	<b>9.5%</b>
<b>Hydropower</b>	TWh	1,013	14%	16.6%	121	-13.7%
<b>Nuclear Power</b>	TWh	328	5%	1.5%	36	2.8%
<b>Wind Power</b>	TWh	730	10%	12.0%	75	37.0%
<b>Solar Power</b>	TWh	525	7%	19.0%	73	38.0%
<b>TOTAL POWER GENERATION</b>	<b>TWh</b>	<b>7,213</b>	<b>100%</b>	<b>6.1%</b>	<b>837</b>	<b>8.9%</b>
Variable Renewable Generation	TWh	1,255	17%	14.8%	148	37.5%
Zero Emissions Power Generation	TWh	2,740	38%	12.9%	321	7.9%

Source: Ember, CEF Estimates

Hydropower shows a comeback, generated power 1,013TWh, taking up 14% of the total power generation, a 16.6% y-o-y increase.

This is followed by wind power generating 730TWh of electricity, accounting for 10% of the total power generation, a 12% y-o-y increase.

Solar power generation reached a total of 525TWh during the first 9 months of 2024, 7% of the total power generation, a 19% y-o-y increase.

Nuclear power generated power of 328TWh, 5% of the total power generation from January to September, a 1.5% y-o-y increase.

Bioenergy generation reached 145TWh during the first 9 months of 2024, taking up 2% of the total power generated, a 2.4% y-o-y increase.

Thermal power generation still takes up 64% of the total power generation, a 2.4% y-o-y increase, reaching 4,618TWh.

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Previous Monthly China Energy Updates [here](#).

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<sup>1</sup> CEF has moved from using generation data from China's National Bureau of Statistic (NBS) to adopting data from [Ember Electricity Data Explorer](#) from this monthly update onwards. This is due to the fact that China's NBS only reports generation from above a certain threshold for revenue, and therefore this data underestimates China's overall power generation, especially distributed zero-emissions energy resources (DER). Ember's data comes from the more comprehensive data for China's power generation provided by China Electricity Council (CEC), which includes DER generation numbers. CEF's adjusted numbers reflect this.