CLIMATE ENERGY FINANCE

MONTHLY CHINA ENERGY UPDATE | Increasing Electricity Demand Showcasing China's Economic Resilience

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NEWLY INSTALLED CAPACITY

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

		Jan-Aug 2024	Share of new adds (%)	Change (yoy %)	Aug-24	Share of new adds (%)
Thermal Power	GW	28.6	14%	-17%	4.2	17%
Hydropower	GW	6.6	3%	-9%	0.7	3%
Nuclear Power	GW	1.2	1%	0%	0.0	0%
Wind Power	GW	33.6	16%	16%	3.7	15%
Solar Power	GW	140.0	67%	24%	16.5	66%
Total capacity added	**GW**	**210.0**	**100%**	**14%**	**25.1**	**100%**
Renewable Energy adds	GW	180.2	86%	21%	20.9	83%
Zero Emissions Capacity Adds	GW	181.4	86%	21%	20.9	83%
Investment in Completed Power Grid Project	1 billion yuan	333.0		19%	79.0	

Source: NBS, CEF Estimates

During the first 8 months of 2024, China added 210GW of new capacity to the grid, a 14% y-o-y increase. August alone saw China add 25.1GW of new capacity additions.

From January to August 2024, China spent RMB333bn (US$47bn) on power grid projects, a 19% y-o-y increase. In August alone, China invested RMB79bn (US$11bn) in the power grid.

From January to August, 86% of the newly added capacity was zero-emissions, a 21% y-o-y increase. In August, 83% of China's new capacity additions were zero emissions capacity.

From January to August, China added 140GW of solar capacity, accounting for 67% of the total newly added capacity, +24% y-o-y. In August, 16.5GW of solar capacity was added.

33.6GW of wind capacity was newly installed during the first 8 months of 2024, accounting for 16% of the total newly installed capacity, a 16% y-o-y increase. August alone saw China add 3.7GW of wind capacity.

China added 6.6GW of hydropower capacity to the grid from January to August in 2024, representing 3% of the total capacity additions during the months, a 9% y-o-y decrease. In August, 700MW of hydropower was added to the grid.

A total of 1.2GW of nuclear capacity was added to China's national grid during the first 8 months this year, accounting for 1% of the total new capacity added. There was no new nuclear capacity added during August.

From January to August, there was still 28.6GW of thermal power added to the grid, representing 14% of the total new capacity. Notably, this is a 17% y-o-y decrease. August saw China add another 4.2GW of thermal capacity.

INSTALLED CAPACITY

Figure 2. National Installed Capacity as of August 2024

		Aug-24	Share of Capacity	Change (yoy %)	Aug-23
Thermal Power	GW	1,414	45%	3.5%	1,366
Hydro Power	GW	429	14%	2.3%	419
Nuclear Power	GW	58	2%	2.3%	57
Wind Power	GW	474	15%	19.9%	395
Solar Power	GW	752	24%	48.9%	505
Total of Installed Capacity	**GW**	**3,128**	**100%**	**13.3%**	**2,762**
Renewable Energy Capacity	GW	1,655	53%	25.4%	1,320
Zero Emissions Capacity	GW	1,713	55%	22.8%	1,395

Source: NBS, CEF Estimates

As of August 2024, China's total installed capacity in its electricity system had reached 3,128GW, a 13.3% y-o-y increase.

As of August 2024, 55% of China's total installed capacity of 1,713GW was zero-emissions capacity, a 22.8% y-o-y increase.

Among zero-emissions energy sources, solar leads the way. China has a total of 752GW of solar capacity installed as of August 2024, which is 24% of total installed capacity, a 48.9% y-o-y increase.

This is followed by wind power. A total of 474GW of wind capacity was installed as at the end of August, accounting for 15% of total installed capacity, a 19.9% y-o-y increase.

Total installed hydropower capacity reached 429GW at the end of August, accounting for 14% of the total installed capacity, a 2.3% y-o-y increase.

China's total installed nuclear capacity reached 58GW by the end of August, representing only 2% of the country's total installed capacity, a 2.3% y-o-y increase.

By the end of August of 2024, China's installed thermal power capacity still represents 45% of the total installed capacity, a 3.5% y-o-y increase, reaching 1,414GW.

ELECTRICITY GENERATION MIX

Figure 3. China's Electricity Generation Mix in Jan-Aug 2024[1]

		Jan-Aug 2024	Share of Generation Jan-Aug	Change (y-o-y %)	Aug-24	Change (y-o-y %)
Thermal Power	TWh	4,086	63%	1.5%	600	4.3%
Coal	*TWh*	*3,887*	*60%*	*1.5%*	*571*	*4.3%*
Gas	TWh	*188*	*3%*	*1.5%*	*28*	*4.3%*
Other Thermal	TWh	*11*	*0%*	*1.6%*	*2*	*4.5%*
Bioenergy	**TWh**	**128**	**2%**	**1.5%**	**19**	**4.3%**
Hydropower	TWh	892	14%	22.4%	165	11.9%
Nuclear Power	TWh	292	5%	1.3%	40	4.9%
Wind Power	TWh	655	10%	9.7%	56	13.6%
Solar Power	TWh	532	8%	37.0%	80	31.4%
TOTAL POWER GENERATION	**TWh**	**6,456**	**100%**	**7.0%**	**941**	**8.0%**
Variable Renewable Generation	TWh	1,187	18%	20.4%	136	23.4%
Zero Emissions Power Gneration	TWh	2,498	39%	17.4%	360	14.6%

Source: Ember, CEF Estimates

From January to August in 2024, China's electricity demand increased by 7% y-o-y, reaching 6,456TWh.

This is a sign of China's continued economic resilience and as a result of the country's continuous electrification-of-everything strategy. CEF expects China's electricity demand to continue to climb in the coming decade.

39% of China's power generation during the first 8 months come from zero-emissions energy, reaching 2,498TWh, a 17.4% y-o-y increase.

Among zero-emissions power generation from January to August, hydropower generated the most electricity, reaching 892TWh, a 22.4% y-o-y increase, representing 14% of total power generation.

This is followed by wind power generation, reaching 655TWh, accounting for 10% of total power generation, a 9.7% y-o-y increase.

The massive progress in scaling up in solar power deployment throughout 2023 and 2024 is now reflected in power generation data.

Solar power generated 532TWh of electricity during the first 8 months of 2024, taking up 8% of total power generation, a 37% y-o-y increase.

[1] 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.

Nuclear power generated 292TWh of power from January to August, taking up 5% of total power generation, showing a 1.3% y-o-y increase.

Bioenergy generated 128TWh, 2% of total power generation, a 1.5% y-o-y increase.

The majority of China's power is still thermal, taking up 63% of total power generation, reaching 4,086TWh, a 1.5% y-o-y increase.

For China to boost its decarbonisation progress, and meet its obligations as a global renewable energy superpower, it needs to cease net new coal-fired power plants built out, and further accelerate new solar, wind, battery energy storage systems, PHS and nuclear capacity addition each month, as well as continue to modernise and expand the national transmission system.

Reforming the Emission Trading Scheme (ETS) System, Carbon Pricing, and the Opportunity for China-Australia Partnership

On 9 September, China released its *Letter on soliciting public opinions on the "Work Plan for the National Carbon Emission Trading Market to Cover the Cement, Steel, and Electrolytic Aluminum Industries"*

China is moving to price carbon. It has been actively revolutionising its national ETS, with plans to cover 7-8 industry sectors including steel, cement and aluminium by the end of this year, a response to its heavy exposure to the EU ETS.

Including these three additional sectors could bring the greenhouse gases covered by the ETS to around 60% of the country's total.

Australia national renewable energy and emissions reduction targets, as well as carbon reduction initiatives such as the Safeguard Mechanism, are foundational frameworks that provide signals to the market that there is a long-term commitment from the government to decarbonise, and that carbon externalities will be increasingly priced-in to carbon intensive industry.

But when we look at the global stage, and Australia's place in it, there is much to be done. For example, the recently introduced Carbon Border Adjustment Mechanism (CBAM) by the EU is spurring responses from the Chinese government as well as drastically changing the global landscape of trade for natural resources and cleantech products.

We see it as a time-critical, top priority for Australia to work with China to form an Asian CBAM, securing our relationship with the biggest player in the global renewable energy supply chain.

An Asian CBAM will create a green premium price signal for decarbonised energy transition materials such as green iron and renewables-processed critical minerals, incentivising investment into these emerging market sectors and ensuring we are not disadvantaged by cheaper, carbon-intensive imports from other market participants.

This is especially key now that our biggest trading partner – China – is diversifying its supply chain in critical minerals and rare earths by investing in processing facilities around the world including the lithium triangle in South America – Chile, Argentina, and Bolivia – which holds more than half of the world's lithium reserves.

This opportunity for Australia to export green iron to China could double our current ~$120bn iron ore industry, assisting it to decarbonise its globally dominant steel industry.

By partnering with China, we can leverage the huge potential for Australia to lead the world in exporting “embodied decarbonisation”, using our abundant clean energy to value-add our strategic metals and critical minerals resources onshore. Why remain a passive player in this transformation when we can become a proactive one.

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Previous Monthly China Energy Updates here.

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