



MONTHLY CHINA ENERGY UPDATE |

China's Renewable Boom Sparks EU Concerns and Offers EMDEs Opportunities

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- China's renewable energy buildout gained momentum in August after hydropower surges. After months of low hydropower generation due to droughts across China, August saw hydropower back on track. Solar and wind power continues to lead in the share of newly added capacity over the first 8 months of CY2023. Zero emission capacity as of the end of August represents half of China's national installed capacity.
- While China continues to massively develop renewable energy, China's climate envoy Zhenhua Xie [said](#) that "completely phasing out fossil fuels is unrealistic, we should build the new before discarding the old". This again outlined that the priority for the Chinese central government is economic development ahead of the need for speed in energy transition.
- As the EU trade commissioner Valdis Dombrovskis highlighted on his recent trip to China, the relationship between China and the EU is '[at a crossroads](#)' amid the escalating China-EU dispute over China's dominance in the EU's renewable supply chain. With the ongoing speed of expansion of China's renewable sector far outstripping domestic installation needs, EU [solar](#) manufacturers again are facing potential bankruptcies even as the EU EV industry warns of EV overcapacity both due to immense Chinese exports.
- Acknowledging that the western world is increasingly concerned about both the consequences of climate change and China's hegemony in the global supply chain. 'China's World Bank' – the Asian Infrastructure Investment Bank (AIIB) – is set to [triple](#) its annual climate change lending to 2030. This is a good start to leverage the benefits of accelerating solar, battery and EV deflation and excess manufacturing capacity, and to extend financial capacity in emerging markets to ensure more sustainable economic growth via the build out of domestic clean energy capacity and hence energy security even as it helps global decarbonisation.

Newly Installed Capacity

Figure 1. New Capacity Installed in China in Jan-Aug 2023

		Jan-Aug 2023	Share of new adds (%)	Change (yoy %)	Aug-23	Share of new adds (%)
Thermal Power	GW	34	17%	73%	2.0	8%
Hydropower	GW	7	4%	-45%	1.7	6%
Nuclear Power	GW	1	1%	-48%	0.0	0%
Wind Power	GW	29	15%	79%	2.6	10%
Solar Power	GW	113	57%	154%	16.0	61%
Other (Biomass, W2E)	GW	14	7%		4.1	15%
Total capacity added	GW	199	100%	106%	26.4	100%
Variable Renewable adds	GW	156	78%	120%	22.7	86%
Zero Emissions Capacity Adds	GW	164	83%	115%	24.4	92%

Source: NBS, CEF Estimates

In August alone, China added 24.4GW zero emissions capacity, 92% of the total newly installed capacity of 26.4GW. It brings the total added capacity from January to August to 199GW, an 106% year-on-year (y-o-y) increase. Of this, 164GW of new capacity is from zero emissions energy sources, taking up 83% of the total of newly added capacity, a 115% y-o-y increase.

A total of 113GW of solar power was newly installed from January to August, 57% of the total newly added capacity, representing a 154% y-o-y increase. 29GW of wind power was newly added to the grid, 15% of the total newly installed capacity, a 79% y-o-y increase. Only 7GW of new hydropower was installed during the first 8 months of CY2023, accounting for 4% of the newly installed capacity, a 45% y-o-y decrease. Only 1GW of new nuclear power was added during January to August, a 48% y-o-y decrease.

The black spot in China's electricity grid modernisation remains that 34GW of new thermal power was added during January to August, representing 17% of the total newly installed capacity, a 73% y-o-y increase.

2GW of new thermal power was installed in August alone, at least a decrease compared to the previous months, with 6.3GW added in July, 4GW in June, and 9.4GW in May ([see our previous Monthly China Energy Updates](#)).

Installed capacity

Figure 2. National Installed Capacity as of Aug 2023

		Aug-23	Share of Capacity	Change (yoy %)	Aug-22
Thermal Power	GW	1,366	49.5%	4.2%	1,312
Hydro Power	GW	419	15.2%	3.9%	403
Nuclear Power	GW	57	2.1%	2.2%	56
Wind Power	GW	395	14.3%	14.8%	345
Solar Power	GW	505	18.3%	44.4%	350
Total of Installed Capacity	GW	2,762		12.0%	2,466
Variable Renewables Capacity	GW	901	32.6%	29.7%	694
Zero Emissions Capacity	GW	1,395	50.5%	20.8%	1,155

Source: NBS, CEF Estimates

As of the end of August, China's national installed zero emissions capacity was 1,395GW, which is 50.5% of the total installed capacity, representing a 20.8% y-o-y increase.

Solar power now leads installed zero emissions capacity. 18.3% of the total installed capacity comes from solar, reaching 505GW, a 44.4% y-o-y increase.

That is followed by hydropower, despite the previous drought-driven declines. 15.2% of total installed capacity is hydropower, reaching 419GW, a 3.9% y-o-y increase.

The total installed capacity from wind power is 395GW, accounting for 14.3% of total installed capacity, showing a 14.8% y-o-y increase.

Installed nuclear power capacity remained 2.1% of the total installed capacity, reaching 57GW.

Thermal power still represents almost half of the total installed capacity, reaching 1,366GW, accounting for 49.5% of the total installed capacity, a 4.2% y-o-y increase.

Electricity generation mix

Figure 3. China's Electricity Generation Mix in Jan-Aug 2023

		Jan-Aug 2023	Share of Generation	Change (y-o-y %)	Aug-23	Change (y-o-y %)
Hydropower	TWh	719	12%	-15.6%	147	19.5%
Thermal Power	TWh	4,139	71%	6.6%	589	-1.6%
Nuclear Power	TWh	288	5%	5.9%	38	5.5%
Wind Power	TWh	531	9%	21.4%	44	-4.8%
Solar Power	TWh	189	3%	23.3%	27	30.4%
Total Power Generation	TWh	5,866	100%	4.8%	845	2.4%
Variable Renewable Generation	TWh	720	12%	21.9%	591	6.1%
Zero Emissions Power Generation	TWh	1,727	29%	0.7%	698	13.3%

Source: NBS, CEF Estimates

August showed another 4.8% y-o-y increase in energy demand in China, reaching 5,866TWh, suggesting China's domestic economic growth is far more resilient than many Western commentaries imply.

Zero emission power generation reached 1,727TWh, accounting for 29% of the total power generation, a 0.7% y-o-y increase. The low increase is a reflection of poor hydropower generation year-to-date. Variable renewable generation showed a 21.9% y-o-y increase, reaching 720TWh, providing 12% of total power generation.

Hydropower generated 719TWh of electricity, which is 12% of total power generation, representing a 15.6% y-o-y decrease.

Wind power accounts for 9% of total power generation reaching 531TWh, a 21.4% y-o-y increase.

Nuclear power generation reached 288TWh, accounting for 5% of total power generation, a 5.9% y-o-y increase.

Solar represents the lowest share of the total power generation, taking up only 3% and reaching 189TWh, highlighting the low capacity factor and the scale of the challenge of decarbonising the Chinese economy, particularly as 'electrification of everything' continues to underpin strong underlying total electricity sector demand. However, solar power generation shows the greatest year-on-year increase of all energy sources in power generation, at 23.3%.

Prioritising economic growth and energy security over energy transition

While China is massively scaling up its renewable energy capacity, its stance and determination on energy transition are being challenged during the massive scaling-up of the country's economy, combined with continued strong economic growth, particularly in

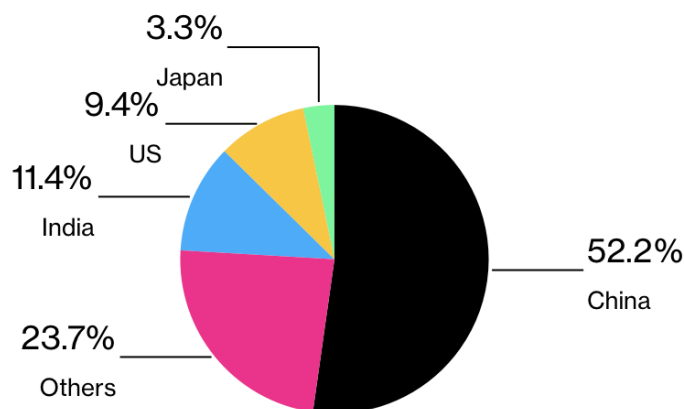
highly energy intensive construction and manufacturing sectors. The need for dramatically improved energy efficiency and energy productivity as a priority is clear.

Zhenhua Xie’s statement that “completely phasing out fossil fuels is unrealistic, we should build the new before discarding the old” again showed that China’s key priority is economic growth and energy security. As Bloomberg’s David Fickling [argues](#), “China’s hunger is not so much for clean or dirty energy, as energy full stop”.

This mindset is undermining global energy transition momentum. While China is the world leader in renewable energy, China also still holds the dubious distinction of being by far the world leader in coal power.

Figure 4: China Dominates Global Coal Power

China produces more electricity from coal than all other countries combined



Source: BloombergNEF

As [figure 4](#) shows, in absolute terms China produces the most electricity from coal in the world, accounting for 52.2% of the total electricity from coal globally, with India running second as a result of its sustained strong economic growth coupled with its failure to-date to deliver on its important aspiration to install 50GW pa of new renewable energy capacity (the current run-rate of 15GW pa is just a third of this target).

Whilst calling for a complete phasing out of fossil fuels is unrealistic near-term, this data does shine a light on the globally dire ramifications of coal companies continuing to avail themselves of the loophole of China’s coal consumption, and of failures to price-in the massive, growing, global externality inflicted by the coal industry’s carbon emissions.

China Shenhua Energy Co. (China Shenhua), the country’s biggest coal company (a subsidiary of one of the country’s biggest power groups, China Energy Investment Group), continues to [seize](#) the entirely flawed ‘opportunity’ to build more coal-power plants before 2025 while the Chinese government prioritises energy security after a few encounters with power shortages. China Shenhua has [11.75GW of coal and gas](#) generation under construction, and

is reviewing previously postponed and suspended projects to see which can be revived under current conditions..

China's renewable exports raised concerns in the EU

EU trade commissioner Valdis Dombrovskis's visit to Beijing late last month highlighted concerns over China's dominance in the EU's renewable supply chains. US energy secretary Jennifer Granholm also [warned](#) that energy security during the global transition away from fossil fuels may be complicated by China's dominance in the processing of critical minerals, with the potential for China to 'weaponise' its control of the sector.

The warnings come as the world is now being flooded with dramatically increased Chinese exports of polysilicon, solar panels, batteries, EVs, wind turbines and so on.

China spent decades massively scaling up its renewable manufacturing capacity, which has led to cheap renewable materials being developed at an unprecedented speed and scale. While this is absolutely needed to underpin the global energy transition at the global scale required, the increasing concentration of supply chains in just one country is creating a growing global backlash, and it has again undermined the market price. China's solar manufacturing capacity expansion is again now rapidly driving down prices for polysilicon and solar panels (see CEF's June 2023 report, [Solar Pivot](#)). The price for solar modules in Europe is now [down](#) 40% in the last 12 months, and we expect this trend to continue at more moderate annual declines to US10c/w by 2030.

The cost to manufacture a solar module in Europe is more than [twice](#) as the current spot price. This creates a policy contradiction, on the one hand helping the EU to reach its [target](#) of 45% of energy generated by renewables by 2030, and opening up a large market and appetite for cleantech products. Cheap and ready-made Chinese products now account for 75% of the EU's solar power imports. According to the Financial Times, the [amount](#) of Chinese photovoltaic cells in storage "is enough to cover Europe's overall annual demand twice over." However, on the other hand, according to [SolarPower Europe](#), the dramatic drop in prices as a result of China's solar manufacturing expansion has meant "the EU's goal to manufacture 30GW of the solar power supply chain in Europe by 2030 was now at serious risk".

Similar concerns are also shared by the EU's EV industry as China in 2023 has become the leading global EV exporter, overtaking the Japanese, having already surpassed Germany in 2022. Brussels [announced](#) an 'anti-subsidy probe' into Chinese EVs as European Commission president Ursula von der Leyen remarked in her annual address to EU lawmakers that "Global markets are now flooded with cheaper Chinese electric cars."

The rapid expansion of manufacturing capacity in China is driving down the global price for renewable supply chain materials, but the concentration of manufacturing supply chains is

giving support to claims of unfair industry support in China, even as some argue that China is also riding the wave of its weak economy.

The [Lowy Institute](#) comments that as a result of China's weakened economy, the Chinese renminbi has fallen by 14% against the US dollar. Accompanied by deflation inside China and inflation elsewhere, Chinese exports are becoming cheaper, enhancing their competitiveness on the global market, which has led to a widened annual trade surplus close to 1 trillion USD.

The EU's policy struggle with China's renewable expansion and dominance in the supply chain comes at a time of a rapidly growing US effort to respond to China via the unprecedented Federal stimulus of the \$US800bn Inflation Reduction Act. This provides significant subsidies for domestic content and includes tariff barriers against Chinese imports. Likewise, India has resorted to import tariffs and domestic manufacturing subsidies via its Performance Linked Incentives. The world has started to wake up to the massive scale of China's technology, investment, manufacturing and export leadership in almost all new sectors of the global energy transition.

What about the emerging markets and developing economies (EMDEs)?

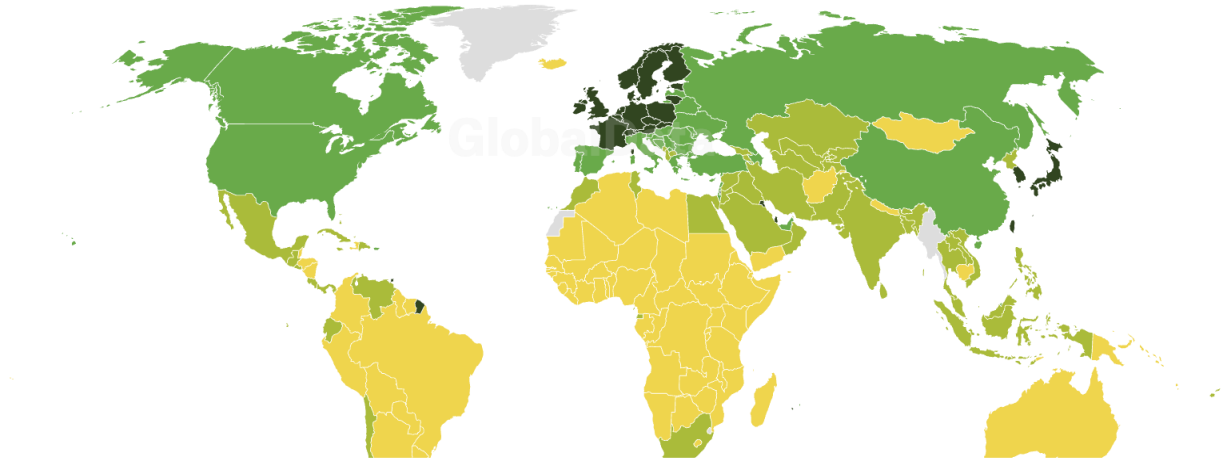
While the increasing scale and decreased prices for Chinese imports are concerning news to the developed world, this is an exceptionally important opportunity for EMDEs to pick up speed in their own national energy transitions – a point highlighted as critically important by the International Energy Agency (IEA) in its new [Net Zero Roadmap 2023](#). The biggest barrier for EMDEs is the urgent need for massive investment in green industries and infrastructure as a way of avoiding stranded assets and climate science trap of the 'grey discount' of unpriced carbon emissions for fossil fuels. As the Glasgow Financial Alliance for Net Zero (GFANZ) [highlighted](#), over US\$1 trillion of investment per annum needs to go into the EMDEs by the end of this decade to reach the global net-zero target.

While prices for Chinese renewable imports are down, aided by the inflation-adjusted low value of the renminbi and China's surging global trade surplus, it is great timing for China to demonstrate global leadership by crowding-in new zero emissions industry investment in emerging markets and create the next great global investment race, challenging Western countries' still unmet Paris Agreement pledges to help EMDEs decarbonise.

Figure 5. Most of the Global South could meet its energy needs with less than 0.1% solar panel coverage

Share of land required to generate all energy from solar (%)

0.1% or less Below 1% Below 5% Over 5%



Source: Carbon Tracker Initiative

As figure 5 shows, most countries from the Global South could meet their energy needs with less than 0.1% solar panel coverage. New wind and solar are now [cheaper](#) than existing fossil fuel generation even absent any explicit price on carbon emissions. BloombergNEF [advised](#) back in 2020 that installing new-build battery storage is already cheaper than imported fossil gas peaking plants.

There is no doubt that it is beyond time that both China and other developed countries mobilise a far greater amount of capital to the EMDEs, with AIIB laying down the challenge to the still massively underwhelming efforts of the World Bank, the International Bank of Reconstruction and Development (IBRD), the International Finance Corporation (IFC), the Asian Development Bank (ADB), the African Development Bank (AfDB), the Inter-American Development Bank (IADB) and the Green Climate Fund (GCF).

The global energy transition cannot be accomplished without greening the EMDEs: nearly [half](#) of the total global greenhouse gas (GHG) emissions and over [one third](#) of energy-related emissions are from EMDEs, and the majority of global economic growth is situated in emerging economies.

The need for more renewable infrastructure and green investment in the EMDEs amid the current global climate crisis is more pressing than ever. Beyond just a moral obligation, it is a strategic necessity. With China's significant efforts driving down the price of renewable products, it is a cost-effective time to propel EMDEs towards a greener and more equitable global economy. By doing so, we would also do ourselves a favour by adding to collective efforts for the global energy transition.

The global renewable race is on, and has been on for a long time. While some economies have been debating if and when to transition, China has surged far ahead in the decarbonisation race domestically, and is best positioned to demonstrate outbound clean energy investment leadership. Other advanced economies, likewise, should not only position themselves to respond to China's dominance in cleantech supply chains, but mobilise capital to green EMDEs if we are to prevent the catastrophic consequences of climate change.

Previous monthly updates [here](#).

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