



CLIMATE ENERGY FINANCE

MONTHLY CHINA ENERGY UPDATE |

The new elephant in the room at COP28 - Developed countries need to put the money where their mouths are

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China entered COP28 with greater climate ambition than anyone else in the room.

Xie Zhenhua, China's special envoy to COP28, [said](#) that China will announce its new interim 2035 carbon goals within two years. China will also set up new emissions reduction targets for 2030, and push for more ambitious methane controls after it [released](#) its own ambitious [methane emissions reduction action plan](#) last month.

China puts its money where its mouth is. After decades of investing in renewable energy development, manufacturing, research and innovation, China is on its way to [peak](#) its CO2 emissions possibly as soon as the upcoming year. David Dodwell of the Hong Kong-APEC Trade Policy Study Group says China's climate action approach is to '[underpromise and overdeliver](#)'. China's continuous scaling up in its renewable expansion has spurred a global renewable race, as global north nations start to deploy aggressive decarbonisation policy and stimulate green investment, as well as counter China's growing [dominance](#) in global renewable and battery/EV refining and manufacturing supply chains.

Australia – which, as a global top 3 exporter of fossil fuels alongside Russia and Saudi Arabia, is one of the biggest fossil fuel elephants in the room at COP28 – joined the [pledge](#) by the US, Japan, Canada, the EU - 118 countries in total - to triple global renewable energy capacity by 2030, and to double energy efficiency. China did not sign up to the pledge. However, China's 'underpromising' here doesn't mean they won't overdeliver this time.

China's fast paced green transformation can be tracked in its electricity mix, which we review monthly. (See previous [Monthly China Energy Updates](#))

NEWLY INSTALLED CAPACITY

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

New Capacity Installed in China in Jan-Oct 2023

		Jan-Oct 2023	Share of new adds (%)	Change (yoy %)	Oct-23	Share of new adds (%)
Thermal Power	GW	44	17%	60%	4.3	18%
Hydropower	GW	8	3%	-52%	0.6	2%
Nuclear Power	GW	1	0%	-48%	0.0	0%
Wind Power	GW	37	15%	76%	3.8	16%
Solar Power	GW	143	57%	145%	13.6	57%
Other (Biomass, W2E)	GW	17	7%		1.5	6%
Total capacity added	GW	250	100%	95%	23.8	100%
Variable Renewable adds	GW	197	79%	109%	19.0	80%
Zero Emissions Capacity Adds	GW	206	83%	105%	19.5	82%

Source: NBS, CEF Estimates

China added a total of 23.8GW capacity in October alone, bringing the total capacity added in CY2023 to 250GW.

Of this, 19.5GW was zero emissions, 82% of total newly installed capacity.

Among the newly added zero emissions capacity, solar power takes the lead. In October, China added 13.6GW of solar capacity, bringing the total newly installed solar capacity from January to October to 143GW, accounting for 57% of the total newly installed capacity during the first 10 months, a 145% y-o-y increase.

That is followed by wind power. October saw China add 3.8GW of wind power capacity. From January to October, China added a total of 37GW of wind capacity, taking up 15% of the total new adds, a 76% y-o-y increase.

China added 0.6GW of hydropower in October to add 8GW to-date in 2023, 3% of the total newly installed capacity, a 52% y-o-y decrease.

China added no new nuclear power capacity in October. During the first 10 months, China added just 1GW of nuclear capacity, a 48% y-o-y decrease.

China continues to add more thermal power. In October, China commissioned 4.3GW of new thermal power. This brings the total added thermal capacity from January to October to 44GW, taking up 17% of the total newly installed capacity, a 60% y-o-y increase.

This is the paradox at the heart of China's rapid decarbonisation and detrimental to the global energy transition. With dramatic improvements in capacities, manufacturing scale and cost deflation of battery energy storage systems (BESS), China needs to re-evaluate

building new coal-fired power plants as an ineffective grid-balancing tool, instead focusing on improving its energy efficiency, grid connectivity, and scaling up solar and wind power.

A shift in the economic growth composition over the coming decade should also see a sustained improvement / energy savings from reduced energy intensity of economic growth, making easier the challenge of China's strong sustained energy and economic growth.

INSTALLED CAPACITY

Figure 2. National Installed Capacity as of Oct 2023

National Installed Capacity as of Oct 2023

		Oct-23	Share of Capacity	Change (yoy %)	Oct-22
Thermal Power	GW	1,374	48.8%	4.3%	1,316
Hydro Power	GW	420	14.9%	3.1%	408
Nuclear Power	GW	57	2.0%	2.2%	56
Wind Power	GW	404	14.4%	15.6%	349
Solar Power	GW	536	19.0%	47.0%	364
Total of Installed Capacity	GW	2,813		12.7%	2,495
Variable Renewables Capacity	GW	940	33.4%	31.7%	714
Zero Emissions Capacity	GW	1,439	51.2%	22.1%	1,179

Source: NBS, CEF Estimates

By the end of October, China's national installed zero emissions capacity reached 1,439GW, accounting for 51.2% of the total installed capacity, a 22.1% y-o-y increase.

536GW of solar capacity is installed nationwide, taking up 19% of the total installed capacity, a 47% y-o-y increase.

Despite suffering from months of droughts and a resulting decline in hydropower generation, 420GW of hydro capacity is installed, accounting for 14.9% of the total installed capacity, a 3.1% y-o-y increase.

There is 404GW of wind capacity, 14.4% of total installed capacity, representing a 15.6% y-o-y increase, such that wind will soon overtake hydro, at least in terms of capacity (if not aggregate generation, for a while yet).

1,374GW of thermal capacity is installed, 48.8% of the total installed capacity, a 4.3% y-o-y increase.

The speed of increase of China's newly added zero emissions capacity and its national installed zero emissions capacity analysed above shows China is already on track to more than treble its variable renewable energy capacity by 2030 even at the current 2023 install rates. A trebling of China's total renewables capacity by 2030 to 3,500GW (i.e. including the 420GW of hydro, which itself has almost trebled over the last decade) would require 30GW of wind and solar per month, a further 50% uplift relative to China's 2023 run-rate.

Given China's solar manufacturing capacity is doubling every two years, this looks entirely achievable. The next equation will be the strategic landuse challenges that are already emerging with respect to the natural limits given solar's significant land footprint. China has already run out of rivers to dam for water management, power generation and flood control (in contrast, the vast majority of US dams were built decades ago and have no power generation capacity installed).

ELECTRICITY GENERATION MIX

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

China's Electricity Generation Mix in Jan-Oct 2023

		Jan-Oct 2023	Share of Generation	Change (y-o-y %)	Oct-23	Change (y-o-y %)
Hydropower	TWh	980	13%	-6.6%	122	23.0%
Thermal Power	TWh	5,108	70%	6.0%	465	4.5%
Nuclear Power	TWh	359	5%	5.3%	36	-0.2%
Wind Power	TWh	642	9%	16.5%	56	-8.2%
Solar Power	TWh	244	3%	23.8%	24	28.6%
Total Power Generation	TWh	7,333	100%	5.4%	704	6.6%
Variable Renewable Generation	TWh	886	12%	18.4%	748	0.5%
Zero Emissions Power Generation	TWh	2,225	30%	4.0%	582	10.8%

Source: NBS, CEF Estimates

China's national electricity demand increased by 6.6% y-o-y in October, reaching 704TWh, showing a continuous economic recovery in China in something of a contradiction to the wildly speculative press of the wider contagion relating to China's property sector financial travails.

Hydropower generated 122TWh of electricity in October, a 23% y-o-y increase, bringing the total hydropower generation from January to October to 980TWh, 13% of total generation, still down 6.6% y-o-y year-to-date.

Wind power generation declined by 8.2% y-o-y in October to 56TWh. From January to October, wind generation reached 642TWh, taking up 9% of total power generation, a 16.5% y-o-y increase.

Solar power increased by 28.6% y-o-y in October, reaching 24TWh. Total solar generation during the first 10 months of 2023 was 244TWh, 3% of total power generation, +23.8% y-o-y.

Nuclear power generation in October was 36TWh, representing a 0.2% y-o-y decrease. This brings total nuclear power generation from January to October to 359TWh, accounting for 5% of total power generation, a 5.3% y-o-y increase.

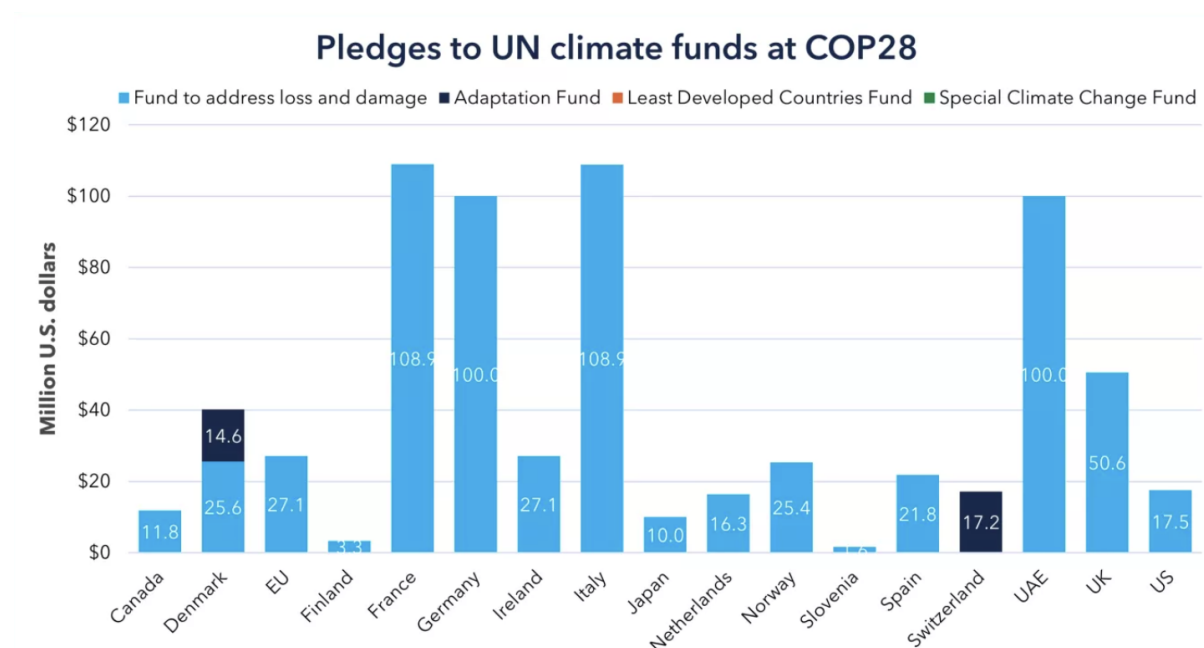
In October, power generated by thermal coal reached 465TWh, a 4.5% y-o-y increase. In the period January to October, a still dangerously high 70% of the total power generation comes from thermal power, reaching 5,108TWh, a 6% y-o-y increase.

COP28

It was no doubt a huge disappointment to hear the president of COP28 – UAE’s Sultan Al Jaber – [say](#) that there is “no science” behind demands to phase out fossil fuels in order to restrict global warming to 1.5C.

The fact that UAE has committed to [chip in](#) \$100m to the loss and damage fund – which is designed to provide financial assistance to poorer nations to recover and rehabilitate from climate change-driven impacts – is laudable. However Jaber’s words still send a dangerous signal that undermine urgently needed worldwide climate action.

Figure 4. Pledges to UN climate funds at COP28



Source: NRDC, based on pledges announced by governments at COP28, as of 3 December 2023

France and Italy each pledged to put \$109m into the loss and damage fund, while Germany pledged \$100m, and the European Union \$27m. The United Kingdom pledged \$50m, while the United States only pledged \$17m (Figure 4). The total pledged amount to address loss and damage reached \$656m. Despite the fact that Australia is a member of the loss and damage transitional committee and contributed to the establishment of the loss and damage fund, Australia is yet to support the fund, providing [zero](#) capital.

CEF would advocate that Australia increase our Federal LNG royalties (the PRRT) beyond the \$500-600m pa currently proposed and contribute the entire increase to the Fund, entirely appropriate as Australia is one of the top 3 fossil fuel exporters globally, and hence ‘our’ fossil fuel firms continue to gain like war-profiteering bandits at the rest of the world’s collective loss. The current implied royalty of just 4% of LNG revenue is paltry compared to state royalties on other commodities of 7-10% and up to a progressive 40% for coking coal in exceptional years Queensland.

The EU is [urging](#) big developing countries including China, South Korea, Russia, Saudi Arabia, and Qatar to become donors. While China hasn’t yet pledged to the loss and damage fund, this finger-pointing statement did not change the fact that the EU shows what

might be seen as a lack of fulsome commitment to the fund with its very modest \$27.1m pledge.

The L&D fund contributions are a good start, providing capital to help poor nations recover from the damage inflicted by the developed economies, which have been responsible for the overwhelming majority of carbon emissions since industrialisation. Nevertheless, more pressure will be put on developed nations as the costs of climate change mount. A [report](#) by Loss and Damage Collaboration shows that loss and damage in developing countries is already greater than \$400bn per year and expected to grow.

In addition to attention to loss and damage, there is the need to assist emerging markets and developing economies (EMDEs) to decarbonise. Nearly half of the total global greenhouse gas (GHG) emissions are now from EMDEs, meaning the world cannot reach net-zero without helping the poor nations to transition. At COP, there was a significant advance on this imperative. The UAE government launched a new investment platform, [ALTÉRRRA](#), to drive private capital into climate investment, and improve climate finance access in the EMDEs and the global south. The platform was launched with a \$30bn commitment from the UAE, with the goal to mobilise \$250bn in climate investment globally by 2030.

As CEF has [written](#), China's massive scaling up in renewables manufacturing, increasing supply and dramatically reducing costs, has made affordable energy transition possible for the world, especially critical for the global south. China's major outbound investment tool is the Belt and Road Initiative (BRI). During the 1HFY2023, over [40%](#) of China's overseas energy projects through the BRI were wind and solar, with zero new coal projects. That is \$4.9bn investment in wind and solar projects from the [total](#) energy sector engagement via BRI during 1HFY2023 of \$12.3bn. In the meantime, Chinese President Xi Jinping has [pledged](#) a further greening of the BRI, to build 'small and beautiful' projects to help with the development of the global south.

This re-alignment and rebuilding of the BRI is an example of China putting its money where its mouth is, and helping enable the energy transformation of developing countries, which other rich nations should learn from, leveraging existing financial institutions like the World Bank, Asian Development Bank, African Development Bank and the AIIB.