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China's global energy transition leadership

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Climate Energy Finance has often [written](#) about how China is leading the world by driving the scaling up of zero emissions industries of the future. Building an unrivaled supply chain capacity, learning by doing and enhancing new technologies is creating a powerhouse of knowledge and capacity. This spans renewable energy and hydro power generation plus smart grid integration, batteries and electric vehicles, and most recently green hydrogen. Heavy industry decarbonisation plans are being formulated, with ambitious targets proposed. The right structures and ecosystems are needed to reinforce and develop this lower emissions industrial development and scaling up in line with President Xi Jinping's 'Net Zero Emissions before 2060' pledge. Enormous progress has been made, but with climate warming impacts accelerating world-wide in 2022, ambition needs to be lifted.

China is already the world leader in producing renewable energy, with [328GW of wind and 306GW of solar power capacity](#) installed as of the end of 2021, equivalent to 40% and 30% of the global total, respectively. China is on track to install over [150GW of new capacity](#), five times the record [30GW of renewable capacity the US](#) is set to install in 2022. China could well install [55-60GW of wind in 2022](#) alone, more than the world installed as recently as [2019](#). And with the five major utilities of China all mandated to have [renewables exceed 50% of total installed capacity by 2025](#), this momentum is set to continue. For example, China Huaneng Group's 14th Five-Year Plan (FYP) New Energy installed capacity target is 80GW in the five years to 2025. At this pace, China is well on track to hit its 1,200GW wind and solar capacity target by 2030 five years early.

[Bloomberg NEF](#) in August 2022 reported that China's renewables investment for the first half of 2022 included large-scale solar totaling \$US41 billion – up 173% from the year before – and investment in new wind projects increasing by 107% year-on-year to \$US58 billion. This is staggering momentum, a point often overlooked when western commentators reference that China is still building new coal mines and coal-fired power plants.

In the newer sector of growing global aspirations for green hydrogen (hydrogen produced via electrolysis of water using renewable energy), China is again way out front. Sinopec in [November 2021](#) launched construction of the world's largest green hydrogen electrolysis plant in Kuqa, Xinjiang. At 260GW nameplate capacity (20,000 tonnes per annum), this is thirteen times the largest operating green hydrogen plant outside of China, that being the [20MW Air Liquide facility](#) in Québec, Canada, commissioned in January 2021). Sinopec is

well on target to be a world leading green hydrogen firm. According to Sinopec President Ma Yongsheng, this involves “advancing energy transformation, ensuring China's energy security and supporting the sustainable development of the global economy.” August 2022 [reports](#) put this project is on track for commissioning by mid-2023.

The growth in the Chinese electric vehicle (EV) sector in 2022 have surprised all, with China Passenger Car Association suggesting the country is on track for [6 million EV sales](#), almost double the 3.3 million sales in 2021. This is double the expected 2022 EV sales in Europe and four times that of the U.S. Having overtaken Tesla in terms of volumes earlier this year, [BYD](#) has reinforced its now leading global position with year-to-July 2022 EV sales of 811,272 units, a staggering 290% year-on-year growth rate.

August 2022 saw China’s CATL announce a new [US\\$7.6bn 100GWh battery manufacturing plant](#) investment into Hungary, one of the largest in the world, part of its strategy to more than treble its global battery capacity to 670GWh by 2025.

For China to sustain world leading growth rates of this magnitude, the Government is going to have to accelerate the designs of the whole structural ecosystem. The national emissions trading scheme (ETS) will need to massively deepen and broaden its reach. The guidelines for heavy industry to reach peak emissions by 2025-2030 need to be finalised and implemented. And recycling policies implemented to facilitate sustainability practices.

Following the first anniversary of the National ETS in China in July 2022, focus is growing on the need to strengthen the price signal, boost integrity of reporting, and widen the reach beyond just the power sector. According to [reports](#) from the China Electricity Council, a key pre-requisite is to build data quality in terms of measurement, reporting and verification before the ETS can be broadened to also cover seven heavy industry sectors, a move that would expand the ETS by 50%, a coverage of 60% of China’s total emissions.

Heavy industry sector plans are being formulated, with the Ministry of Industry and Information Technology (MIIT), MEE and NDRC releasing a new [update in August 2022](#) for targets to cut industry energy intensity by 13.5% and carbon emissions intensity by 18% in this 14th FYP. Ambitious targets for [aluminium](#) to peak emissions by 2025 and reduce emissions subsequently from that peak by 40% by 2040 have been announced, whilst reports reference a [peak in steel emissions by 2025 or 2030 plan](#) is still being debated.

In the action plan for the country to reach peak carbon emissions by 2030 issued last year, the State Council proposed to “[improve the waste recycling network](#)” whilst the Ministry of Industry and Information Technology (MIIT) in February 2022 released a policy aimed at accelerating the comprehensive utilisation of industrial resources, encouraging industrial applications for waste solar and wind turbines. Given the many millions of batteries, panels and turbines annually that will be reaching the end of their design life over the coming 1-2 decades, resource security, sustainability and waste disposal implications all dictate significant effort is required. Peak steel sector emissions by 2025-2030 also dictates a huge lift in the relatively low scrap steel recycling rates to underpin electric arc furnace build-out.

We applaud the signing into US law of the Inflation Reduction Act in August 2022. The \$369bn earmarked for clean energy and climate change mitigation initiatives is an unprecedented level of support from the US Federal Government for the transition to sustainable energy, including expanding subsidies for firmed renewable energy and green hydrogen, as well as focussing on enhanced monitoring of and reduction efforts in methane

emissions in upstream oil and gas activities and imposes a financial penalty on methane emissions. This will enhance the US investment in scaling up and commercialising new technologies critical for a decarbonised future. But this needs to be put in the context of the delays to US climate action over recent years at a time when the US's key technology rival, China is already hugely invested in accelerated momentum and decarbonisation technology investments across the spectrum.

The world will be the winner in this accelerating technology race between the US and China.