China droughts highlight energy challenge as climate heats up

By Kyle Mullin on 7 Sep 2022

Hotter weather is expected to push China's enormous energy consumption even higher in the coming years.

China's record-breaking heatwaves and droughts have highlighted the energy demand challenges facing the country due to climate change [File: Mark Schiefelbein/AP]

Beijing, China – China's record-breaking heatwaves and droughts have highlighted the sizable challenges the world's second-largest economy faces to meet its energy needs in the years ahead amid a changing climate.

Hotter and drier weather is set to push China's already enormous energy consumption higher in the coming years. That means policymakers will not only need to skillfully manage a transition away from fossil fuels towards green energy — but also tackle deficiencies in its network of renewables such as hydro and wind.

The limitations of China's existing renewables grid were exposed last month when droughts disrupted hydropower plants along the Yangtze River, leaving millions of citizens and businesses in the country's southwest without power.

“This is a harsh reminder that the low carbon transition in our power supply has yet to be accomplished,” Ma Jun, director of the Beijing-based Institute of Public and Environmental Affairs, told Al Jazeera. “And it’s going to be more difficult to achieve that than expected.”

Hydropower has been earmarked as an essential pillar of China’s ambitions to reach peak carbon emissions by 2030 and carbon neutrality by 2060.

Achieving those goals — not to mention satisfying the need of industry and citizens for abundant and reliable power — would be a challenge even without the inefficiencies hampering China’s green energy grid.

Experts say that China is far from reaching its potential for generating renewable energy [File: Reuters]

In the southwestern province of Sichuan, renewables have the capacity to produce 85 percent of needed energy, while actual consumption only comes to 38 percent because of storage capacity, according to Ma, who laments a “vast gap” between the potential and reality.

Ma said China could learn from Europe, where Germany taps into hydropower and nuclear energy in Norway and France, respectively, when unfavourable weather hampers solar and wind power generation.

“Europe faces difficulties in that coordination, because they are losing a base load from natural gas,” Ma said. “But their coordination overall is better.”

Some experts believe China could do a better job of distributing power by reducing red tape.

“As well as boosting generation and transmission infrastructure, the government will need to ease the way in which power is transmitted and sold across the country,” Philip Andrews-Speed, a senior principal fellow at the National University of Singapore’s Energy Studies Institute, told Al Jazeera.

“This is constrained by administrative – planned sales – and political – local protectionism – obstacles. As a result, available power in one area is not always transmitted to another area.”

Increased efficiency could transform the scale of China’s hydropower sector, the world’s largest, especially in locales like Sichuan, which gets 80 percent of its power from hydro dams.

China’s hydropower capacity increased sixfold between 2000 and 2019, when it accounted for nearly one-third of global capacity, according to the Center for Strategic and International Studies think tank.

At the same time, China’s energy needs have skyrocketed, rising fivefold between 2000 and 2019, according to the Brookings Institute. Last year alone, consumption grew about 10 percent despite the widespread rollout of lockdowns to control COVID-19.

Authorities across China last month introduced power rationing amid record-breaking droughts [File: China Daily via Reuters]

Yet the drying up of reservoirs during a six-week heatwave that began in June has drawn attention to the dangers of relying heavily on a single energy source.

“Hydropower, just like solar and wind, is not as consistent and stable as fossil fuels,” Ma said. “So we need to find more sophisticated solutions to achieve low-carbon transition.”

In Chongqing, home to the factories of major brands including Honda, Ford Motor and Isuzu Motors, officials last month ordered businesses to temporarily suspend operations to conserve power as temperatures rose as high as 45 degrees Celsius (113 Fahrenheit). In Dazhou, a city of 5.4 million in central Sichuan, authorities introduced rationing of electricity for retail spaces, offices and homes.

Elsewhere, labourers in the central province of Jiangxi worked 15-hour shifts to drill wells for drought-hit villagers while farmers across the province and in neighbouring Hunan have been left scrambling for sources of water to irrigate their crops.

Official data released in late August indicated that the hot weather in July — before the worst of the heatwave — inflicted losses of 2.73 billion yuan ($391m) and affected 5.5 million people across 185,000 hectares (457,500 acres) of land.

Despite China's green ambitions, the energy shortages have prompted authorities to order coal-fired plants to generate more power.

"China remains very dependent on coal power, which is water intensive," Jonna Nyman, a lecturer in international relations at the University of Sheffield, told Al Jazeera. "China's energy supply is already tight, and these challenges put further strain on an already strained system."

In the longer term, Beijing is banking on a range of ambitious projects included in its 14th five-year plan for renewable and non-fossil fuel energy development, including plans to build wind and solar power plants with a capacity equivalent to Europe's entire renewable energy grid within the next eight years.

But even as the government works to build up China's green energy capacity, industry will have its own important role to play, Ma said.

"Another lesson from the drought is for businesses: they should not try to put all eggs in one basket," Ma said.

"Yes, there is cheap hydropower in the southwest, so we have seen a lot of energy-intensive industries and supply chains flock to this region. But in the meantime, we need to recognise the instability of such non-fossil fuel power, and we still need to pay real attention to energy efficiency."

Discussion Qns:

1. *What are the socio-economic impacts of drought on China?*
2. *How can China ensure its energy sustainability in the future, knowing the effects of drought?*