



U.S. President Barack Obama and Chinese President Xi Jinping shake on a climate deal last week in Beijing.

CLIMATE POLICY

# China's peak carbon pledge raises pointed questions

Modelers move to analyze implications of largest emitter's commitment to stabilize emissions by 2030

By David Malakoff

Five years ago, the sight of a rainbow delighted a group of Chinese and American climate policy experts gathered in Washington, D.C. The rainbow wasn't real: Instead, the colorful graph of arcing curves showed predictions for how China's carbon dioxide emissions, now rising fast, might flatten out and fall over the next 50 years.

The delight, however, was genuine. At the time, it wasn't clear how China could curb its spiraling emissions of greenhouse gases, which threatened to undermine global efforts to curb climate change, without enormous economic cost. But the rainbow showed that modeling teams were converging on a relatively optimistic conclusion: China could stop its emissions growth by the 2030s—and then begin making cuts—through a combination of ambitious but economically prudent energy policies and inexorable demographic change.

Last week's news that China has vowed to stabilize its greenhouse emissions by 2030 suggests that its leaders paid attention to such calculations. And despite calls for more radical cuts from some quarters, climate experts aren't minimizing the importance of the joint U.S.-China announcement on 12 November, which came as President Barack Obama visited Beijing. (He pledged that the United States will emit 26% to 28% percent less carbon in 2025 than it did in 2005.) "To tell the truth, we did not expect [China to set] such clear targets," says cli-

mate specialist Qi Ye, director of the Brookings-Tsinghua Center for Public Policy, a think tank in Beijing. Recent studies suggest that China's goal is "relatively ambitious" and "implies a meaningful effort beyond business-as-usual," said Lynn Price, of the China Energy Group at the Lawrence Berkeley National Laboratory (LBNL) in California, in a statement. For example, to achieve its goal, China said that by 2030 at least 20% of its power will come from sources other than fossil fuels, up from about 10% today.

But the haziness of China's emissions pledge has sent many modelers scurrying back to their computers, eager to understand the implications and the obstacles. Critics of the bilateral deal, including leading Republican lawmakers in the United States, have been quick to point out that China is simply pledging to halt the growth of emissions, not cap them at a particular tonnage. That, they argue, could allow China to rapidly increase emissions over the next decade—by building fleets of new coal-fired power plants, for instance—in order to make the 2030 peak as high as possible.

But that scenario "flies in the face" of other realities, including the government's growing desire to reduce air pollution and diversify its power sources, says Deborah Seligsohn, a former U.S. diplomat who specialized in China's climate policy. Although China will certainly build some new coal-fired power plants, she says, the pledge means "it wouldn't make sense to build a bunch of new power plants that you then ... take offline in 2030."

Indeed, models that include data on the falling prices of renewable power technologies, China's aging and stagnating population, and the nation's growing urbanization suggest that China could substantially lower the peak of its annual emissions—now about 7 billion tons (7 gigatons)—compared with existing scenarios. In 2030, the peak would fall from as much as 18 Gt to as little as 14 Gt, suggests one forecast by Climate Action Tracker, an alliance of four European research groups. Other studies suggest that if China adopts even more aggressive policies, as it says it might, emissions in 2030 could top out at just 8 or 10 Gt.

At the global level, modelers say the China and U.S. pledges would make a noticeable dent in carbon pollution, especially on top of a commitment earlier this year by 28 European nations to cut emissions by at least 40% below 1990 levels by 2030. In 2100, annual global emissions of carbon dioxide would be 80 Gt, about 20 Gt less than under existing trends, estimate researchers at Climate Interactive, a nonprofit in Washington, D.C. Still, the team notes that the reduction would neither prevent average global temperatures from rising nor keep warming below the 2°C threshold that many scientists say is desirable.

And despite China's apparent political will, the government may struggle to meet its pledge. Concerns about sustaining its rapid buildup of nuclear power and connecting solar and wind power to the national electrical grid could explain the relatively cautious 20% goal for nonfossil energy, said Nan Zhou, the deputy group leader of LBNL's China Energy Group, in a statement. Restraining emissions from transportation as a growing middle class demands cars may also be a challenge, Seligsohn says.

Stabilizing emissions by 2030 could shave 1% to 3.7% off China's gross domestic product, estimates Wang Yi, deputy director-general of the Institute of Policy and Management at the Chinese Academy of Sciences in Beijing. That could hamper government efforts to pull millions of people out of poverty. But China's willingness to risk that slowdown—and Obama's decision to move in parallel—"could have global reverberations" as nations prepare to finalize a new international climate agreement next year in Paris, says Joanna Lewis, a China scholar at Georgetown University in Washington, D.C. "There is no doubt," she says, "that the other major economies are carefully considering these announcements." ■

With reporting by Eli Kintisch and Ling Xin.

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