Competition With China Can Save the Planet

Pressure, Not Partnership, Will Spur Progress on Climate Change

Andrew S. Erickson and Gabriel Collins

Late last year, Chinese President Xi Jinping pledged that his country would reach "carbon neutrality" by 2060, meaning that by that time, it would remove every year from the atmosphere as much carbon dioxide as it emitted. China is currently the world's largest greenhouse gas emitter, responsible for nearly 30 percent of global carbon dioxide emissions. Targeting net-zero emissions by 2060 is an ambitious goal, meant to signal Beijing's commitment both to turning its enormous economy away from fossil fuels and to backing broader international efforts to combat climate change.

But this rhetorical posturing masks a very different reality: China remains addicted to coal, the dirtiest fossil fuel. It burns over four billion metric tons per year and accounts for half of the world's total consumption. Roughly 65 percent of China's electricity supply comes from coal, a proportion far greater than that of the United States (24 percent) or Europe (18 percent). Finnish and U.S. researchers revealed in February that China dramatically expanded its use of coal-fired power plants in 2020. China's net coal-fired power generation capacity grew by about 30 gigawatts over the course of the year, as opposed to a net decline of 17 gigawatts elsewhere in the world. China also has nearly 200 gigawatts' worth of coal power projects under con-

ANDREW S. ERICKSON is Professor of Strategy at the U.S. Naval War College's China Maritime Studies Institute and a Visiting Scholar at Harvard University's Fairbank Center for Chinese Studies.

GABRIEL COLLINS is Baker Botts Fellow in Energy and Environmental Regulatory Affairs at Rice University's Baker Institute for Public Policy and a Senior Visiting Research Fellow at the Oxford Institute for Energy Studies.

struction, approved for construction, or seeking permits, a sum that on its own could power all of Germany—the world's fourth-largest industrial economy. Given that coal power plants often operate for 40 years or more, these ongoing investments suggest the strong possibility that China will remain reliant on coal for decades to come.

Here's the inconvenient truth: the social contract that the Chinese Communist Party (CCP) has forged with the Chinese people—growth and stability in exchange for curtailed liberties and one-party rule—has incentivized overinvestment across the board, including in the coal that powers most of China's economy. China may be shuttering some coal plants and investing in renewable energy, but serious decarbonization remains a distant prospect.

Xi's bullish talk of combating climate change is a smokescreen for a more calculated agenda. Chinese policymakers know their country is critical to any comprehensive international effort to curb greenhouse gas emissions, and they are trying to use that leverage to advance Chinese interests in other areas. Policymakers in the United States have hoped to compartmentalize climate change as a challenge on which Beijing and Washington can meaningfully cooperate, even as the two countries compete elsewhere. John Kerry, the United States' senior climate diplomat, has insisted that climate change is a "standalone issue" in U.S.-Chinese relations. Yet Beijing does not see it that way.

After U.S. Secretary of State Antony Blinken declared in late January that Washington intended to "pursue the climate agenda" with China while simultaneously putting pressure on Beijing regarding human rights and other contentious policy issues, Zhao Lijian, the Chinese Foreign Ministry's spokesperson, warned the Biden administration that cooperation on climate change "is closely linked with bilateral relations as a whole." In other words, China will not compartmentalize climate cooperation; its participation in efforts to slow global warming will be contingent on the positions and actions that its foreign interlocutors take in other areas.

Zhao's conspicuously sharp-tongued riposte is already inducing key U.S. partners to pull their punches in climate interactions with China. For instance, in a February video call with Han Zheng, China's top vice premier, Frans Timmermans, the executive vice president of the European Commission and the EU's "Green Deal chief," reportedly steered clear of discussing human rights and the EU's plans for a carbon border tax, issues China finds contentious. Beijing will likely con-

tinue using negotiations on climate issues to shield its domestic human rights record and regional aggression. Worse still, it will probably demand economic, technological, and security compromises from the United States and its allies—such as their agreeing not to challenge China's coercive activities in the South China Sea—for which those countries would receive little, if anything, in return.

As a result, U.S. officials seem to face a stark choice. If they make concessions to win China's cooperation in tackling climate change, Beijing will offer only those climate promises that it would outright fail to fulfill, find itself unable to fulfill amid opposition from powerful domestic interests, or, less likely, fulfill merely by default if its economic growth slows more rapidly than widely expected. But if they refuse to deal with China, they may imperil efforts to slow global warming. There is another option, however. When it comes to climate change, the United States should compete, not cooperate, with its rival.

COAL TRUTHS

For a quarter century, the United States and other major powers have sought to cooperate with China on climate change. Saving the world from climate change, the argument runs, requires broad international agreement, and no substantive settlement can exclude the two biggest players—China and the United States. This multilateral effort has taken shape under the UN Framework Convention on Climate Change (UNFCCC), which reached its apogee in 2015 with the signing of the Paris climate agreement. The deal hinged on China and the United States—the two biggest emitters—coming to terms.

The two countries' bilateral negotiations in advance of the Paris meeting culminated in China committing to the following key items: reducing its carbon dioxide emissions per unit of GDP by 60 to 65 percent from its 2005 level by 2030; starting a national system by 2017 to cap carbon emissions in key energy-intensive heavy industrial sectors and to incentivize emission reductions by forcing companies to buy and sell permits to emit; prioritizing the development of renewable energy sources; and aiming to reach peak carbon dioxide emissions by "around 2030," after which those emissions would decline. These targets were not especially ambitious, and yet Beijing has still generally fallen short of them—for instance, it launched a national emission-trading scheme on only a limited basis and about four years behind schedule. Tellingly, the government

Clouded vision: in Xinjiang, China, January 2018

JASON LEE / REUTERS

work report delivered by Premier Li Keqiang at the 13th National People's Congress in March makes no bold commitments and says only that China will meet targets for "intended nationally determined contributions" by 2030.

Current climate diplomacy, as embodied by the Conference of the Parties process, under the auspices of the UNFCCC, treats China as indispensable due to the scale of its greenhouse gas emissions. But in the roughly six years that have elapsed since Beijing signed the Paris agreement, the country's actions have only exposed the agreement's fundamental weakness: its inability to enforce true accountability in the face of obdurate national interests. Data from the nongovernmental organization Global Energy Monitor show that between 2015 and 2020, Chinese firms added approximately 275 gigawatts of gross coal-fired power generation capacity—larger than the entire coal-fired fleet of the United States, the world's third-largest coal consumer. More than 85 percent of this recently installed capacity uses modern supercritical and ultra-supercritical boiler technology—an expensive investment meant to last a long time—locking in demand for decades to come and underlining the renewal of China's long-term vows with coal.

As multiple UNFCCC participants now contemplate stricter emission targets, Chinese leaders will not do the same. Instead, they will cater to domestic economic interests and immediate energy security concerns and reject emission-reduction commitments that require significant deviation from China's present course. Beijing insists that its enormous population and relatively modest average income classify China as a less developed country for the purpose of climate negotiations and thus that Chinese leaders should not be expected to curb emissions at the same rate as developed countries. It is true that China emits less per capita than many wealthy countries. But its per capita emissions are already higher than those of some industrialized countries, such as Italy and the United Kingdom. Moreover, the absolute quantity of China's emissions—which, at the end of the day, is the number that actually matters to the earth's atmosphere—is staggering. Between 2009 and 2019, China emitted nearly twice as much total carbon dioxide as did the United States. That gap will only widen as policy incentives in Beijing preserve coal as a core energy source for decades to come, with dire consequences for the global atmospheric and oceanic commons.

When it comes to climate change, the United States should compete, not cooperate, with China.

It will be incredibly hard to wean China off its overdependence on coal. Leaders at both the national and the local level are bound to the cheap fuel, which spurs the economic growth that ensures their political survival. Local officials hungrily tap into coal to boost growth figures just long enough to win promotion to higher assignments elsewhere. They think in the short term and typically prefer to invest in projects under their jurisdiction, rather than crafting more climate-friendly systems that cross provincial lines and optimize the use of energy but require political negotiations and the possible surrender of control. Consequently, China is littered with irrational energy-intensive investments, including unnecessary coal plants.

A core pillar of China's economy remains its tremendous capacity to build infrastructure, which is dependent on emission-intensive industries. To escape the economic downturn that has accompanied the COVID-19 pandemic, China has relied on coal-fired heavy industry to boost GDP growth. In 2020, Chinese blast furnaces and mills produced over one billion metric tons of crude steel—a historic high. Aluminum

smelters also produced record volumes during 2020, as did cement plants, with China's production of each commodity accounting for nearly 60 percent of the global total.

All of this will likely get worse, since construction appears poised to expand. Excavator sales, one of the best leading indicators of economic activity in China, hit a record high in 2020. Heavy-equipment buying sprees suggest that local contractors, the people outside government best positioned to anticipate future construction projects, see major new work on the horizon. This, in turn, portends the substantial continued production of steel, cement, and other high-emission commodities in the coming years. China may ultimately adhere to its pledged goal of ensuring that its carbon emissions peak by 2030. But even if China's emissions in 2031 turn out to be lower than those of 2030, the high-carbon mark it is on pace to set will make Beijing's supposed victory a loss for the global climate overall, not to mention a Pyrrhic victory for China itself.

The costs of China's stubborn coal habit will be severe. The country's own coal users and the plants being built abroad as part of the Belt and Road Initiative could burn 100 billion metric tons of coal between now and 2060. This estimate is conservative, factoring in existing coal-fired power plants, coal power stations under construction, coal-to-chemicals facilities, and industrial boilers, while also taking into consideration the meaningful expansion of renewable and nuclear energy in the country. One hundred billion metric tons of coal would bury all five boroughs of New York City under a 340-foot-tall pile. Burning it would likely raise atmospheric carbon dioxide levels by nearly ten percent from their current levels.

A GREEN FAÇADE

China's climate diplomacy stands at a great remove from this carbonaceous industrial reality. Chinese leaders insist that their country is committed to fighting climate change, pointing to its considerable investments in renewable energy and its efforts to boost power generation through nuclear, natural gas, wind, and solar sources. China's power generation investments on their face suggest that coal might be yielding to these renewables. Between 2014 and 2020, the country added 235 gigawatts of solar power capacity and 205 gigawatts of wind power capacity, according to China's National Energy Administration, a combined sum nearly twice as large as the roughly 225 net gigawatts of coal power station capacity added during that time.

But intermittent electricity sources, including many forms of renewable energy, require backup power generation to maintain the stability of the grid. The CCP cannot risk blackouts, which would cripple economic activity and undermine the party's standing. A significant electricity supply crisis—or crises over time—could morph into a fundamental crisis of political legitimacy. As a result, China remains committed to coal. In 2020, coal-fired plants ran at an average utilization rate—a measure of what percentage of time in a given year a facility actually produces electricity—of about 50 percent, far higher than sources of wind (24 percent) and solar (15 percent) energy. China also surges physical supplies of coal to maintain the stability of the electric grid during cold spells and heat waves. The Chinese rail system handled a record volume of coal bound for power plants during a cold snap in December 2020.

China's climate diplomacy stands at a great remove from the country's coal-hungry industrial reality.

Challenges to the stability of the electric grid will proliferate if invariably intermittent renewable energy makes up a greater share of China's power supply. The United States uses natural gas to back up renewable energy, but China's attempts to replicate the U.S. shale boom have failed, and the country already imports more than 40 percent of the natural gas it consumes. Herein arises an underappreciated national security concern. China's gas imports used to come primarily through pipelines from Myanmar, Russia, and Central Asia, but to satisfy future demand, China will have to rely increasingly on seaborne imports of liquefied natural gas. If gas-fired plants become a larger part of China's electricity portfolio, maritime supply lines will become all the more sensitive for Beijing; a rival power could block seaborne gas shipments and thereby destabilize China's electric grid. That strategic consideration is yet another factor favoring the persistence of coal in China.

Chinese officials proclaim that they are shuttering coal plants. Indeed, by one count, China closed 46 gigawatts of coal power capacity between 2015 and 2020. But a deeper look at the retirement of these facilities reveals that China remains as committed to coal as before. Authorities have mostly closed coal plants in wealthy coastal provinces such as Guangdong to clear up local air and open real estate for more revenue-boosting projects. But they have then simply shifted

such facilities to poorer, inland provinces, from where coal-powered electricity is effectively exported by wire to coastal industrial hubs.

Moving smokestacks from Shanghai or Guangdong to Anhui, Hunan, Inner Mongolia, or Xinjiang is a form of policy triage. It removes pollutants from the air in wealthier cities and prevents bouts of unrest, such as the 2016 protests in the municipality of Chengdu prompted by wintry smog. Yet massive net emissions of carbon dioxide continue mostly unabated. Furthermore, the coal power stations built over the past decade and being built today in China are expensive, cutting-edge facilities that replace older, cheaper plants. These new plants have equipment that better controls pollution from sulfur dioxide and particulates, although not carbon dioxide emissions. They occupy real estate with few alternatives for more profitable applications. As a result, these plants are more likely to remain in operation through the common service life of 40 years and are less likely to be retired prematurely.

The provinces most aggressively closing their coal plants tend to be those such as Guangdong, Jiangsu, and Zhejiang, which do not boast large coal-mining operations and where coal power stations employ a tiny fraction of the workforce compared with other industries. For poorer parts of China, such as Inner Mongolia, where coal forms a bigger part of the local economy, the political calculus will likely prove different: local officials will be more reluctant to withdraw from coal.

China's coal sector and related industries collectively employ tens of millions of people and control infrastructure worth trillions of dollars. Outsiders often assume that the Chinese state can easily execute an ambitious energy policy, such as a transition away from coal. But the state is not a monolith. A tangle of more particular and parochial interests can thwart all but the highest-priority directives from the center, which will almost certainly not include meaningful climate reform. Efforts to change China's colossal energy system in an acceptable timeframe will work only if the interests of power brokers at the local, provincial, and national levels are broadly aligned.

These interests remain deeply divided when it comes to energy. Shuttering—or even just partially idling—coal plants and the mines supplying them could mean the loss of vast sums of invested capital and many jobs. Green energy projects most likely could not proportionally offset these losses. In the United States, each megawatt-hour of electricity generated from coal has been estimated to support five times as

many jobs as a megawatt-hour of wind power does, and in China's more labor-intensive economy, the ratio could be even more unfavorable.

Xi had formative experiences in China's countryside. He and other senior leaders steeped in CCP history presumably take rural economic interests seriously. The concerns of powerful coal barons and the local officials who welcomed coal plants 15 years ago (and more recently) will likely hinder China's current green push as authorities negotiate political and socioeconomic compromises. Compounded over time, this dynamic will make coal more enduring than presently expected, with a commensurate impact on the trajectory of China's carbon dioxide emissions.

China's avowed commitment to the transition away from fossil fuels raises an ironic but serious concern: the country's role as the workshop of the global green energy revolution, making everything from solar panels to electric-vehicle batteries, relies heavily on a coal-fired supply chain. Activities including rare-earth smelting (to produce the materials necessary for much green technology) and electric-vehicle-battery production liberally utilize carbon fuels.

For instance, the production of a 100-kilowatt-hour battery—the same size as the one powering the Tesla Model S—requires the amount of energy from approximately seven metric tons of coal. And the emissions behind electric vehicles don't end with the making of batteries: without major shifts in how China makes its electricity, electric vehicles driven in China will be effectively charged with coal. One million plug-in electric cars using China's power grid could, in many parts of the country, emit roughly as much carbon dioxide as one million gasoline-powered passenger sedans.

Some Chinese officials and influential advisers—such as Xie Zhenhua, the country's special climate envoy—do recognize that reducing emissions and remedying the CCP's decades-long legacy of environmental destruction are important goals in themselves. But the combination of a foreign backlash against China's increasingly aggressive behavior and pushback from domestic interest groups troubled by China's 2060 carbon-neutrality pledge will likely strengthen those officials who adhere to what the Peking University scholar Zha Daojiong calls the "nationalist school" of energy security thought. Energy policy decision-making in China is likely to become increasingly entangled in questions of security, as exemplified by Li's October 2019 remarks in which he described coal as a core national security re-

source. In the meantime, China's climate diplomats will continue to engage in greenwashing when it comes to their country's coal use and to subordinate the imperatives of climate cooperation to the CCP's domestic and geopolitical objectives.

The implications for U.S. policy in the coming years are stark. The earth's atmosphere transcends national borders, and China—primarily through coal use—is by far the world's single largest emitter of many key greenhouse gases. A more sustainable emission path requires Beijing's participation in international negotiations. But proactively seeking this cooperation makes the United States and other countries supplicants—and China has already clearly signaled that its participation in climate discussions is contingent on concessions in other domains. Accordingly, any bilateral political or security accommodations made to coax China into discussing climate issues would in fact make the United States, the Indo-Pacific region, and the world lose twice. Washington would forfeit its ability to effectively confront, for example, China's coercive efforts in the Indo-Pacific as Chinese interlocutors stalled at the negotiating table by offering illusory climate commitments.

Beijing has won concessions while relentlessly pursuing its narrow self-interest in other arenas. For instance, at the 2015 Association of Southeast Asian Nations summit, Li called for the resolution of ongoing territorial disputes in the South China Sea "through negotiation and consultation." But even as he made those comments, the People's Liberation Army was rapidly militarizing those very waters despite assurances from Xi two months prior that China would not do so. In the case of climate negotiations, Chinese officials will offer rosy rhetoric even as coal-fired plants in China and those being built by Chinese firms abroad continue to emit millions of metric tons of greenhouse gases per day. The interests of the CCP would win in a parochial sense, but all parties would ultimately lose from the degradation of the shared biosphere. Only competition, not supplication, will induce Beijing to reframe its approach to emissions and climate change.

TIME TO COMPETE

China's strong structural incentives to continue using coal on a massive scale imperil the prospects of climate negotiations. A more successful path runs not to a negotiating table but through the arena of competition. The need for this shift is now acute: a cooperation-first approach in which Beijing sets the fundamental terms is doomed to

fail. Countries seeking cooperation with China are supplicants and, under a best-case scenario, will be forced to make concessions first, after which Beijing might finally deign to engage. A strategy that leads with competition will turn the diplomatic tables on China. Washington should not abandon the Paris agreement and the UNFCCC process. Rather, it should seize the initiative before the next session of the Conference of the Parties, scheduled to take place in November 2021 in Glasgow, by taking several bold steps.

Washington should build a coalition of like-minded partners—largely drawn from the industrialized member states of the Organization for Economic Cooperation and Development—to pressure China into sourcing its energy supplies more sustainably. In 2019, the OECD countries commanded nearly 75 percent of global GDP and accounted for about 35 percent of the world's carbon dioxide emissions. Such a coalition, incorporating key players among this group, including Australia, Canada, France, Germany, Italy, Japan, South Korea, and the United Kingdom, has a good chance of establishing the critical mass needed to pressure Beijing to cut emissions. Together with the United States, those countries boasted an aggregate GDP of nearly $43 trillion in 2019—approximately half of total global GDP, according to the World Bank.

An assembled coalition should seek to use carbon taxation—a levy on goods or services corresponding to their carbon footprint, or the emissions required to make them—to change Chinese behavior. Led by the United States, the key industrial democracies that collectively account for the world's largest market bloc should institute domestic carbon taxes, preferably benchmarked to a negotiated standard and with provisions that would allow the rate to be increased on an annual or biannual basis, if necessary. These countries should then institute carbon border adjustment mechanisms: a tax on imported goods based on their assessed carbon footprints if they come from a place with no or lower carbon pricing.

Much of the data required to assess the carbon footprints of imported goods already exist commercially, particularly for large-volume goods such as steel, aluminum, cement, ceramics, automobiles, and other such highly energy-intensive products often made in China. Objective, publicly available carbon footprint audits would help defuse accusations from Beijing that Chinese firms were being unfairly singled out and provide a basis for the resolution of any disputes at

the World Trade Organization in the event that Beijing retaliated with punitive tariffs or other measures against goods from a country participating in the carbon alliance.

Such a coordinated system would make carbon-intensive Chinese goods less competitive and reduce the disadvantages that manufacturers in the United States face from coal-fired Chinese competitors. But more important, it would force China to take decarbonization seriously. Even as China tries to reorient its economy to domestic consumption, Chinese firms still crave access to global export markets. With carbon border adjustment mechanisms in place, Chinese firms would have to change the way they source energy to remain economically viable in key foreign markets.

Carbon taxation now attracts serious attention on both sides of the Atlantic, and the world's democracies are generally significantly ahead of China when it comes to both meaningfully pricing carbon and having the industrial and energy-sourcing preconditions in place to make the transition to a future of net-zero carbon emissions viable. Sixteen European countries already tax carbon to varying degrees, and the European Commission is considering a carbon border tax as part of the European Green Deal. Meanwhile, bills proposing carbon taxation have been sponsored by both Democratic and Republican lawmakers in the U.S. Congress.

Equally important, big companies—including those with an existential interest in fossil fuels—also appear to accept the inevitability of carbon taxation. Court filings have revealed that in 2017, business planners at ExxonMobil—the doyen of international oil and gas firms—were already assuming a tax on carbon dioxide emissions in the OECD countries of $60 per metric ton by 2030. For perspective, consider that a carbon tax of $60 per metric ton would increase gasoline pump prices by about 54 cents per gallon, adding an average of roughly $245 to each American's annual fuel bill. Most people would not welcome the additional cost, but it is bearable. Carbon taxation would be more palatable if part of the revenue raised went to a national innovation fund, with the remainder returned to households through direct payments via so-called carbon dividends, as has been advocated by former U.S. Secretaries of State James Baker and George Shultz. Carbon dividends could be means-tested, with proportionally larger payments going to lower-income individuals and households to compensate for the inherently regressive nature of

what is, in effect, a tax on energy inputs. Other countries in the carbon alliance could adopt a similar approach to convince their respective societies of the merits of carbon taxation.

The implications for Chinese firms would be more severe. To remain competitive, Chinese industrial players would be incentivized to invest in new energy sources and cleaner, greener manufacturing processes. This would, in turn, push China toward a less carbon-intensive economic model. At that point, the United States and its allies would already have a mechanism in place to make sure that Beijing remained committed to decarbonization—the ability to increase carbon tax rates to counter Chinese backsliding. And for its part, China would be far less able to weaponize climate change negotiations at the expense of the global commons.

A climate competition strategy of this kind would also suit the Biden administration's domestic priorities. A carbon tax with border adjustment provisions would bring manufacturing jobs back to the United States and boost the various other industries that support production activities. It would encourage the deployment of technologies that seek to prevent emissions from reaching the atmosphere—direct air capture; soil-based sequestration; and other carbon capture, utilization, and storage practices and technologies—which would keep domestic oil and gas production viable in an emission-constrained world. Carbon taxation would also stimulate the greater development of wind and solar energy and of small modular nuclear reactors, and potentially even the development of geothermal energy. As such, it would help strengthen and even expand the abundance of U.S. domestic energy sources needed to fuel the manufacturing renaissance the Biden administration clearly seeks. Together, these advantageous effects would help ensure the domestic support necessary to sustain carbon taxation over the long term and reassure other countries that the United States can remain a committed partner for the decades that will likely be needed to make a lasting transition to a lower-emission world.

COMPETITION FOR THE GREATER GOOD

In Chinese foreign policy, climate change does not hold the same environmental and moral importance that it does for many American policymakers. Beijing's fundamental goal remains promoting the CCP's rule, image, and influence. It can further this goal through participating in the global green economy: selling electric vehicles and batteries, rare-earth minerals, and wind turbine components. Or it

can use climate negotiations to demand that the United States and others accommodate Chinese economic, political, and security imperatives in exchange for promises that will likely remain unfulfilled.

To force meaningful change, the United States must build a climate coalition to put pressure on China and its exporters. Such action could bolster reformers in China by allowing them to advocate deeper and faster decarbonization on the grounds that it would increase China's national competitiveness. The pressure created by a carbon taxation regime among industrialized democracies would help empower China's domestic energy-transition advocates against opponents who seek to keep the country's energy sources rooted in near-term local imperatives that foster continued dependence on coal.

Climate competition will allow the United States to win twice, thwarting both Chinese coercion and potentially irreversible ecological damage. Negotiating proactively with China cannot curtail climate change; Beijing would impose unacceptable costs while failing to deliver on its end of any bargain. Only a united climate coalition has the potential to bring China to the table for productive negotiations, rather than the extractive ones it currently pursues. And only the bottom line—not moral exhortations—will convince China to mend its ways and seriously cut its emissions.