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“China’s Environmental Challenges & U.S. Responses”
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*Written Testimony of Dr. Jennifer L. Turner,
Director China Environment Forum, Woodrow Wilson Center*

Chairman Merkley, Chairman McGovern, and respected Members of the Commission, thank you for the opportunity to present and have a discussion with you today about China’s climate commitments and clean energy transition. I will make short comments on 3 topics that can be explored more deeply in the Q&A, in my written testimony and after this session.

The UN just issued an update on the world’s progress in addressing climate change with a sobering conclusion that even if nations fulfill their current Paris greenhouse gas reduction commitments, the world is still headed to catastrophic global warming by the end of the century. So China and the rest of the world need to act more aggressively.

1) CHINA IS ACCELERATING DECARBONIZATION OF ITS ENERGY SECTOR, BUT CONTRADICTIONARY TRENDS SLOW IT DOWN.

China is #1 in clean energy investment and leading the world in wind, solar, EVs, and Super Grid Development

Today, China is the world’s largest producer of solar panels, wind turbines, batteries, and electric vehicles — in great part because it has been the top investor in clean energy for nine out of the last ten years.¹ In 2020 alone, China installed more than 70 GW of new wind capacity.² To give a sense of scale that is slightly over half of the total U.S. installed wind (111 GW). Wind power is in the air here as well. In 2020, with Texas leading the way, the United States installed 14.3 GW, a record year. Despite the higher numbers of installations, China still loses wind power due low turbine quality, grid connection problems, insufficient battery storage, and grid operators and provinces still giving coal priority. One strategy to help improve wind connectivity was a big push in 2019 and 2020 to build offshore wind, bringing it closer to large population centers.³ Today, nearly a quarter of all offshore wind capacity is in Chinese waters.⁴ Just one example of how China often moves fast on such infrastructure projects.

China has made significant progress in decarbonizing their energy sector, but the country is still #1 in existing and planned coal-fired power capacity

Since 2011, China has burned more coal than all other nations combined.⁵ And China is currently responsible for roughly one quarter of annual global greenhouse gas emissions,⁶ which is over two times more than the next nation, the United States, at 11 percent.⁷ Of all of China’s CO2 emissions, half comes from energy, with steel production being the next largest source.⁸ China currently has more than 1,000 existing coal plants and coal accounts for 56.8 percent of the country’s energy consumption.⁹ This is a drop down from 2009 when coal made up 71 percent of China’s energy pie. As part of the war on pollution that kicked off in 2014, the government accelerated closures of old coal plants and accelerated renewable

investments. In 2015, the Chinese central government initiated a traffic light system for the construction of new coal plants in the provinces. Most provinces initially had red lights, but with the economic slowdown over the past two years, most plans for coal plants have been granted green lights.¹⁰ Currently, there are plans to build 200 new coal plants.¹¹

Throughout much of the 2000s and 2010s, seven Chinese cities topped the ranks of being most polluted in the world.¹² In 2013, Beijing saw the world's first "airpocalypse" with particulates more than 30 times the recommended volume.¹³ In 2016 when China laid out its 13th Five Year Plan, a maximum target was set at 1,100GW of coal nationally.¹⁴ Since then, air pollution has fallen by 25 to 35 percent in most major cities.¹⁵ Today, the situation has improved, but Chinese cities still account for 42 of the top 100 most polluted cities, attributed increasingly to the growth in private vehicle ownership.¹⁶ In Beijing and Shanghai in 2020, almost 50,000 deaths were linked to smog and the economic costs related to this air pollution are estimated at 23 billion dollars.¹⁷ The Chinese government's climate action and decarbonization efforts are propelled in great part to mitigate the threats to human health from air pollution as well as increases in economic damage from floods, droughts, and sea-level rise.

2) CHINA IS MEETING ITS PARIS CLIMATE COMMITMENTS, BUT THEY NEED TO SET MORE AGGRESSIVE TARGETS TO HIT THEIR 2030 CO2 PEAK AND 2060 CARBON NEUTRALITY GOALS.

China Climate Commitments & Compliance — Across the spectrum of decarbonization investments and the reduction of CO2 emissions, China has proven a leader, but sometimes governance challenges and competing priorities have slowed down some low-carbon efforts.

At the 2020 UN General Assembly, Chinese President Xi Jinping promised that China will peak carbon emissions by 2030 and be carbon neutral by 2060.¹⁸ To reach the 30/60 goals the government has instituted new plans and investment to continue transitioning to green, renewable energy sources, continuing its expansion of super grids and electric vehicles, as well as intensifying energy efficient building regulations. The government also has made major promises to increase forest cover as carbon offsets and include non-CO2 short-lived climate pollutants like methane, Nitrous Oxide, Black Carbon, and Hydrofluorocarbons.

China's Paris Agreement NDCs — At the Climate COP26 in Glasgow, China will be announcing new Nationally Determined Commitments to accelerate reduction in greenhouse gasses. China has reached most of its UN Nationally Determined Commitments ahead of 2020, which has promoted many Chinese and international experts to argue that China could go bolder and deeper with these new commitments. Most notably shifting China's targets to be total emission reductions rather than per unit of GDP. However, China's 14th FYP released in spring of 2021, calls for a minor increase in the maximum annual coal output to 4.1 billion tons, rather than any decrease from the current output of 3.9 billion tons.¹⁹ Critical for the economy, not just the environment, the 14th FYP also targets a reduction in CO2 emissions per unit of GDP, from 18 percent to 13.5 percent by 2025.²⁰ China has one of the most carbon intensive economies and the costs of pollution on health and economic growth underscore China's motivation for decarbonization.

China's National Carbon Trading Scheme — Building on many years of exchanges with U.S. and E.U. experts, China launched its National Carbon Emission Trading (ETS) Scheme in early 2021. China's plans for an ETS began in 2015, but had been delayed many times since then. Eventually in 2018, the Ministry of Ecology Environment (MEE) launched several small pilot ETS schemes with different prices and voucher quotas. The first nationwide ETS scheme began in 2021 and only covered the power sector, consisting mostly of SOEs. These energy companies account for half of China's CO₂ emissions and 12 percent of the global total. The ETS trading scheme will next be expanded to cover the industry sector which accounts for another 30 percent of China's CO₂ emissions.²¹ Unlike other ETS schemes, China's ETS is not cap-and-trade, rather it is just trade. MEE issues quotas to companies whose CO₂ emissions are above a determined threshold (currently 26,000tCO₂). Companies must then record and report their emissions and pay for credits used. Unused credits could be sold on the market, and companies can be forced to purchase credits when emitting more CO₂ than they have credits for. Eventually, China's ETS will expand to cover all economic sectors in China. Most recently, the MEE released a revised draft of the ETS scheme that increases penalties for non-compliance and other market measures such as a mechanism that prevents the price from changing more than 10 percent per day.²²

China's Super Grid Development — Because much of China's installed renewables had historically been in the far-flung Xinjiang province and energy lost in transmission along with curtailment meant that in order for these projects to really reduce coal in a meaningful way, they began constructing a new super-grid to tie the nation's energy sources together.²³ To help get more renewables on the grid, over the next four years, installed battery capacity is expected to balloon ten-fold from 3 GW in 2020 to 35 GW.²⁴ This boom could not only fuel China's EV industry and improve renewable energy storage, but could also bring down global prices on batteries.

China's Energy Mix Transition — Additionally, while China's grid capacity is currently made up of only 10 percent non-hydro renewables, Beijing has mandated an increase to 30 percent by 2030.²⁵ This will be done by installing more than 1.2 billion kilowatts of wind and solar power.²⁶ In 2020, China added a total of 135GW of wind and solar, which equaled half the year's global total.²⁷ Yet, in the same year the world as a whole still added 60GW of coal, most of this was either in China or financed by China.²⁸ Renewable energy jobs are a booming sector, but like the United States, China also struggles with transitioning its coal sector workers. China has shed some 2.4 million since 2015.

China's Frictions Between Market and State/Provinces and Center — While the Chinese government has said it wants to open the clean energy market for private enterprise, it still sets all of the targets from Beijing.²⁹ Thus, according to Anders Hove, a researcher at the Oxford Institute for Energy Studies, the markets are seized by fear and unable to act freely. For example, the National Energy Administration and National Development Reform Commission issued a joint statement setting the target for wind and solar installs as 240GW each,³⁰ but when the market got too hot too quickly, the government removed key subsidies. The freeze on solar PV tariffs in 2018 led 50 percent of the private companies to close by 2020. This kind of solar power Darwinism weeds out the weaker companies.³¹ While China had initially instituted a feed-in tariff to incentivize offshore wind projects, this fee paid to suppliers was gradually reduced to the point that it will end entirely next year. This pushed some offshore wind projects underwater financially.³²

3) CHINA'S OVERSEAS FOSSIL FUEL INVESTMENTS WERE NULLIFYING DOMESTIC DECARBONIZATION, BUT OVERSEAS COAL INVESTMENTS ARE NOW SLOWING DOWN.

Is There a Green BRI?

There is an endless need for investment to bring stable and clean electricity to the developing world. For example, between now and 2040, 60 percent of new energy demand will occur in the Indo-Pacific.³³ This energy hunger catalyzed China's expansive Belt and Road Initiative (BRI) to prioritize energy investments in its first five years. Research from the American Enterprise Institute pegs total Chinese overseas investment at more than two trillion dollars as of 2020.³⁴

Within the roughly \$200b China has invested in energy infrastructure abroad, just over half has been spent to create 100,000 MW of fossil fuel generated electricity and less than five percent has been spent on wind or solar.³⁵ However, trends show that with the accelerated push for and declining cost of renewables, coal usage is projected to become non-competitive and lead to stranded assets.³⁶

The 2019 Decarbonizing the Belt and Road report, from Tsinghua University's Ma Jun, states that the combined CO2 emissions from all of China's Belt and Road Initiative energy projects — including planned and under construction — will far exceed the Earth's remaining carbon budget, even if all nations meet their Paris Accord goals.³⁷

Chinese outbound FDI peaked in 2017.³⁸ Annual BRI spending dropping some 43 percent in 2020,³⁹ due in part to the suspension or termination in 2019 and 2020 of Chinese-backed coal projects worth about \$47b. In the first half of 2021 China financed no new coal plants in countries involved in the BRI.

One of the most promising pledges toward a "Green" BRI could come in the form of the Belt and Road Bankers Roundtable Mechanism (BRBR) green bond and the Belt and Road Green Finance Index that were announced at the Second BRI forum in 2019. These policies could allow several large banks from China and Europe and elsewhere to form a universal ranking system for BRI projects and swappable bonds that would allow for accelerated financing of low carbon projects.⁴⁰ In the last seven years, China has invested in 12 GW of wind and solar projects in South and Southeast Asia — this is equivalent to 21 standard coal plants.⁴¹

Potential U.S.-China Climate Change Space Race?

In the April 2021 US-China Climate Crisis Statement, both countries agreed not only to make improvements in domestic decarbonization, but also to prioritize investments and finance to decarbonize developing countries. The International Renewable Energy Agency (IRENA) says that the world needs to increase investments in renewable energy by tenfold to 4.4 trillion dollars each year until 2050 if we are to seriously limit climate change impacts.⁴² This massive need for renewables is but one example of how the global market for clean energy and low carbon technologies is vast, with plenty of room for Chinese and U.S. investments.

The current tensions in the U.S.-China relationship makes it difficult for the two to collaborate as closely as they did for decades. U.S.-China cooperative competition around clean energy galvanized both countries to undertake more aggressive climate mitigation action and ultimately promulgate a bilateral climate agreement. This past cooperation offers models of how the two countries could collaborate with developing nations.

During the Obama Administration, the two countries created a unique form of bilateral collaboration focused on clean energy innovation — the Clean Energy Research Centers that brought Chinese and U.S. national labs, NGOs, companies, and researchers together to jointly develop clean energy technologies--from renewable energy and clean diesel, cleaner coal, and energy efficient buildings to water-energy technologies and EVs.

China currently accounts for half of all electric vehicle sales globally⁴³ and over 90 percent of e-buses in the world are operating in China. China's new energy vehicle credit trading program was actually modeled on California's Zero Emission Vehicle (ZEV) Program.⁴⁴ China excels at investing in hard infrastructure and technologies like electric vehicles, but developing countries also need assistance with technology enabling legislation, such as the ZEV program. The United States remains a major technology innovator. In the EV space, the United States is stronger in vehicle-to-grid technologies and in regulatory space. Energy storage projects in the United States are projected to triple from 2020 to 2020 and account for half of the installed battery capacity in the world by then. And Europe, too, will see a drastic uptick of 70 percent in installed storage.⁴⁵

The Better Utilization of Investments Leading to Development (BUILD) act, instituted as section 1401 of public law 115-254 in October of 2018, rejuvenated U.S. International Development Finance Corporation. In cooperation with the U.S. Department of State and USAID, the DFC currently has an appropriation from Congress of 33 billion dollars.⁴⁶ The DFC recently announced its investments will be net zero carbon by 2040.⁴⁷ Additionally, the newly crafted bill, "Strategic Competition Act of 2021" has a large portion based solely on the energy infrastructure investment competition between the United States and China.⁴⁸ Meanwhile, the U.S. International Trade Agency has helped American businesses to invest nearly 200 billion dollars abroad.⁴⁹

During his remarks at the September 2021 Major Economies Forum, President Biden reiterated his plan for a historic investment to "build a clean energy future that creates millions of jobs and ushers in new industries of the future" and more than triple American investment in energy infrastructure modernization abroad by 2024, up to \$100b/year.⁵⁰

A greener BRI and a reinvigorated U.S. investments into clean energy infrastructure and regulatory structure, along with parallel efforts by Europe, could represent a Green Marshall Plan for the world.

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