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ISSUE BRIEF

THE ROAD FROM PARIS: CHINA'S PROGRESS TOWARD ITS CLIMATE PLEDGE

China has committed to reducing its carbon intensity 60 to 65 percent from 2005 levels by 2030, peaking its carbon emissions by 2030, increasing non-fossil-fuel energy to 20 percent of its energy mix, and expanding forested land. China has made significant progress since the Paris Climate Change Conference in December 2015. Coal consumption has remained relatively flat since its peak in 2013, and China's wind and solar energy deployment continue to grow at the fastest pace in the world. A transition to cleaner energy will help China tackle its air pollution challenges and put the country's future growth on a low-carbon pathway.

OVERVIEW OF NATIONAL CIRCUMSTANCES

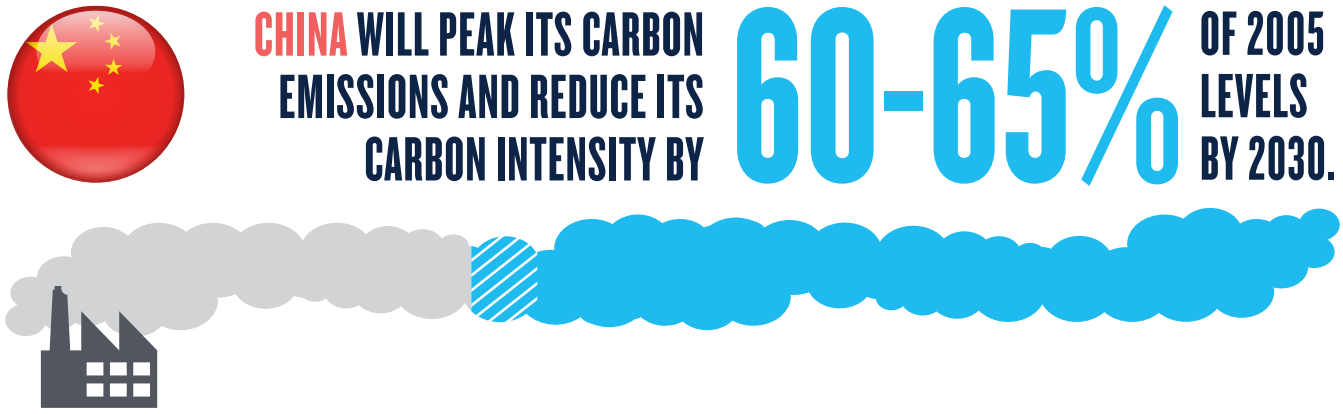
Since the 1980s, China has undergone rapid industrialization and urbanization. China is the world's biggest emitter of greenhouse gases, and was responsible for 23 percent of the global total in 2012.[1] In addition, China is the world's largest consumer of coal, which accounts for 62 percent[2] of the country's primary energy consumption and is the main source of its carbon emissions and its serious air pollution. The government is now tackling these challenges.

CHINA'S CLIMATE PLEDGE

In advance of the 2015 Paris Climate Change Conference, countries submitted pledges to reduce GHG emissions after 2020. China's climate pledge included four goals for 2030:

1. Peaking carbon dioxide emissions by around 2030 and making best efforts to peak earlier.
2. Lowering carbon dioxide emissions per unit of gross domestic product (GDP) by 60 to 65 percent from the 2005 level.
3. Increasing the share of non-fossil (renewable and nuclear) energy sources in the energy mix to around 20 percent.
4. Increasing forest stock volume by around 4.5 billion cubic meters from 2005 levels.[3]

China is implementing a variety of measures to meet these goals, including a national carbon cap-and-trade program, a green dispatch policy, and a cap on coal consumption as part of its 13th Five-Year Plan for 2016 to 2020.[4,5]



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THE PARIS AGREEMENT

In late 2015, the 21st session of the Conference of the Parties (COP21) to the 1992 United Nations Framework Convention on Climate Change (UNFCCC) was held in Paris. The 196 nations that are part of the UNFCCC approved the Paris Agreement, which aims to limit global temperature rise to 2 degrees Celsius, and to make best efforts to keep it to 1.5 degrees. To that end, countries submitted intended nationally determined contributions (INDCs) detailing the level to which they planned to cut emissions and their plans to reach that goal. The Paris Agreement entered into force on November 4, 2016—and the INDCs are now formally enshrined as part of the Agreement—and hereafter referred to as nationally determined contributions (NDCs).

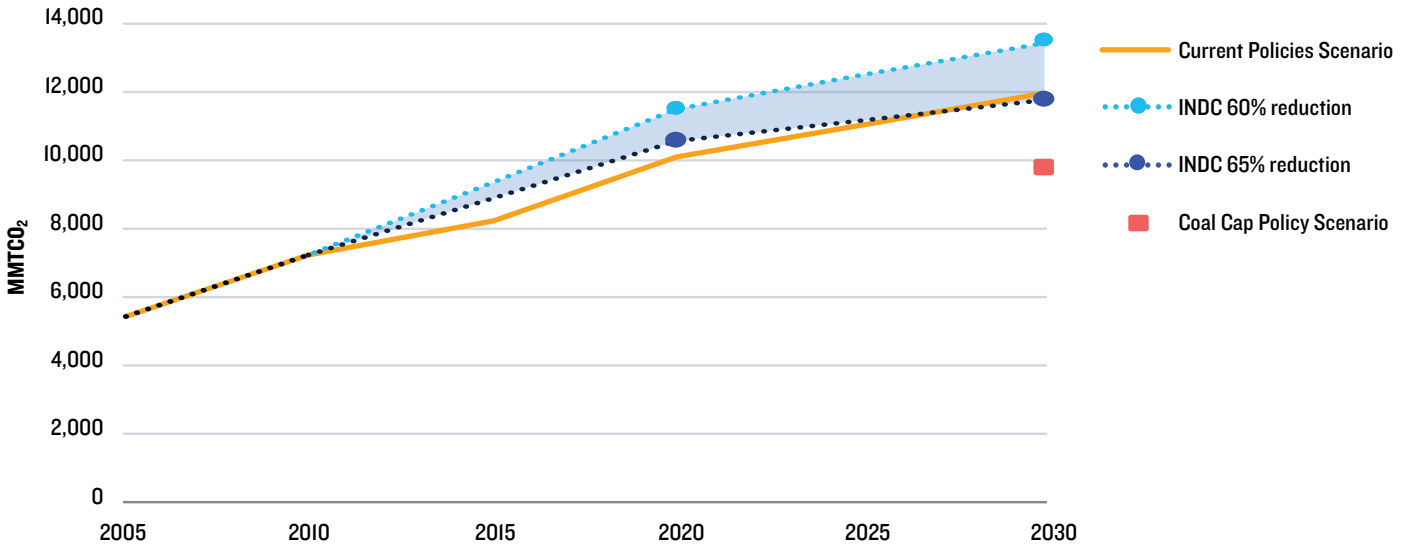
China's 20 percent target for non-fossil energy could reduce carbon intensity by 70 percent—or even more, if China's actual GDP growth is slower than the projected 7 to 7.5 percent, as a number of independent analysts have suggested is likely.[6] This target could contribute to a significant drop for global carbon emissions, given China was responsible for 28.5 percent of global carbon emissions in 2015.[7]

In addition to its domestic commitments, China will support climate action in other countries. During his September 2015 visit to Washington, President Xi Jinping announced action on two fronts: China will provide $3.1 billion USD (CNY 20 billion) through its South-South Climate Cooperation Fund to support climate change mitigation and adaptation in developing countries. Second, it will "strengthen green and low-carbon policies and regulations with a view to strictly controlling public investment flowing into projects with high pollution and carbon emissions both domestically and internationally, and is planning on "taking the driving seat in international cooperation to respond to climate change." Progress is being made on reducing coal consumption domestically, but it remains to be seen whether China's support for coal plants and other high-carbon projects abroad will follow suit.[8] In September 2016, at the G20 summit in Hangzhou, China and the United States formally joined the Paris Agreement. As the world's two largest GHG emitters, this action set the stage for other countries to follow suit. The positive momentum helped the Paris Agreement officially enter into force on November 4, 2016, several years before experts had anticipated that it would.

CLIMATE MITIGATION POLICY

China's climate commitment is supported by its 13th Five-Year Plan (2016 to 2020), which includes energy intensity (energy consumption per unit of GDP) and carbon intensity reduction targets of 15 percent and 18 percent, respectively, for 2020, continuing China's efforts to make its economy more energy efficient and low-carbon.[9] China's 13th Five-Year Energy Development Plan lays out China's first-ever mandatory coal cap, which aims to bring the country's coal consumption down from 64 percent of total national energy consumption in 2015 to 58 percent in 2020.[10] The National Climate Change Plan for 2014 to 2020 also calls for stabilizing carbon emissions from steel and cement—two of its most pollution- and energy-intensive industries—at

CHINA'S GHG EMISSIONS



Source: Natural Resources Defense Council; based on data from EIA ,GDP projections from the China Coal Cap Project, and China's INDC submission to the UNFCCC.

2015 levels by 2020.[11] The climate pledge lists several other policies as well, including emissions standards for the energy, metallurgy, iron, steel, petrochemical, chemical, transportation, and construction sectors, as well as other heavy industries. China's commitment under the Paris Agreement targets a carbon dioxide emissions peak in 2030. However, since 2014, China's carbon dioxide emissions have fallen or have remained stable three years in a row.[12] If China continues its efforts to decarbonize its economy, it will be able to achieve its carbon dioxide emissions peak goal well in advance of its 2030 target.

Renewable Energy Growth in China

China's wind and solar energy markets are now the largest in the world, and they are likely to maintain this lead given current growth rates. The 13th Five-Year Plan for Energy Development, released in January 2017, set an ambitious target for wind power, aiming to reach 200 gigawatts (GW) by 2020, up from 129 GW in 2015.[13] It also planned for solar capacity to reach 100 GW by 2020, up from nearly 43 GW in 2015.[14] In a move of ambitious leadership, after realizing it could surpass these targets, China revised its wind and solar energy targets to 260 GW and 210 GW by 2020, respectively.[15]

Over the past few years, China has consistently led the world in renewable energy production and clean energy investment, though a sizable portion of its non-fossil-fuel energy comes from large hydropower, which has environmental drawbacks. In 2016, China invested $88 billion USD in renewable resources, compared with the United States' $44.1 billion USD.[16] The resulting increase in generation from wind and solar resources was more than enough to cover the growth in electricity consumption in 2015.[17] In the beginning of 2017, China announced its intention to invest $360 billion USD in renewable energy by 2020.[18]

Coal Consumption Caps

Coal is China's largest source of carbon emissions—accounting for about 71 percent of the nation's total—and peaking coal consumption early is key.[19] In addition to the mandatory national coal cap in its 13th Five-Year Energy Development Plan, China is also implementing provincial and local targets and plans for coal. This allows China to continue reducing coal consumption rates, a trend which started in 2014 and has continued through 2016.[20] Capping coal consumption could help ensure that China's carbon emissions peak much earlier than its 2030 target year.

In 2015, the National Center for Climate Change Strategy and International Cooperation (NCSC), one of China's premier think tanks, released two studies as part of the China Coal Cap Project coordinated by NRDC. These studies showed that China's carbon emissions could peak by 2025 if coal consumption is no more than 4 billion tons by 2020 and 3.5 billion tons by 2030.[21] This earlier peak would significantly improve air and water quality since coal consumption accounts for 50 to 60 percent of China's fine particulate matter (PM 2.5) pollution and coal mining consumed 67 billion cubic meters of water in 2010, 11 percent of national water use.[22]

In addition, a 2015 study from the London School of Economics examined China's shifts from heavy industry to a services and consumer economy and from coal to cleaner energy and found that emissions could peak by 2025 or sooner.[23] The overall emissions reduction could be even more dramatic if China's GDP growth slows as part of the "new economic normal." In this scenario, China's leaders will seek slower but more stable and sustainable GDP growth using low-carbon energy sources.

Regional coal consumption caps: Mandatory coal consumption caps have already been adopted in many of China's top coal-consuming provinces. Beijing, Tianjin, Hebei, Shandong, Henan and the Pearl River Delta are to reduce their coal consumption by about 10 percent by 2020, compared to 2015; while Shanghai, Zhejiang, Jiangsu, and Anhui are to reduce their coal consumption by about 5 percent. Given the significant coal consumption in these regions, this will result in a reduction in coal consumption of about 140 million tons by 2020 if the regions all fulfill their targets.

Peaking coal consumption in China's power sector: China's power sector is undergoing a historic shift from relying primarily on coal power to integrating a growing share of wind, solar, and other low-carbon generation sources. The share of coal power in China's total electricity generation fell from 67.2 percent in 2015 to 65.2 percent in 2016. Faced with significant overcapacity of coal power, China moved to halt the construction of over 150 GW of coal power plants in the first half of 2017.[24] Still, China's coal power capacity is slated to rise from around 900 GW in 2015 to 1100 GW in 2020, as outlined in China's 13th Five Year Plan for Energy Development. Limiting the expansion of China's already bloated coal power capacity could reduce the risk of stranded assets, which have been estimated at almost $1 trillion USD,[25] and bring significant environmental and health benefits.

Building an Efficient, Low-Carbon Energy System

China's 12th Five-Year Plan set a binding energy efficiency target to cut energy intensity by 16 percent from 2011 to 2015. China surpassed that goal and reduced its energy intensity by 18.2 percent. These efforts will continue in the 13th Five-Year Plan with a 15 percent energy intensity reduction target for 2020. To this end, China is continuing to push for mandatory energy efficiency measures for the top 15,000 energy-consuming companies. China is also implementing its Action Plan of Industries Addressing Climate Change (2012 to 2020) and will set carbon emissions targets and action plans for key industries. For instance, China has committed to reducing the production and consumption of potent GHGs like hydrofluorocarbon-22 (HFC-22) by 35 percent from 2010 levels by 2020, and by 67.5 percent by 2025. The nation also pledged to control emissions of HFC-23 by 2020.

In addition, Chinese companies are taking the lead on developing air-conditioning equipment that does not rely on HFCs.

Controlling Emissions from the Transportation and Building Sectors

China is taking measures to make its buildings more energy efficient by adopting increasingly stringent standards for new construction and energy efficiency retrofits for existing buildings. To accommodate its rapid urbanization, China is adding billions of square feet of floor space in new buildings every year. By 2020, China plans to increase the share of green buildings in new construction to 50 percent.

Also, in step with urbanization, emissions from the transportation sector have grown rapidly. In response, China plans to increase the share of public transportation in large and medium cities to 30 percent by 2020.[26] In addition, China aims to have 5 million "New Energy Vehicles" (battery electric, plug-in hybrid, fuel-cell vehicles) on the road by 2020. China is also in the process of rolling out a credit mandate that would require manufacturers to meet a New Energy Vehicle production quota, in tandem with a credit mandate for fuel economy, and China's Ministry of Information and Industry Technology has announced it is working on a phase out plan for the sale of petrol vehicles. Meanwhile, China is strengthening its vehicle emission standards to be as strict or stricter than existing standards in the United States and the European Union.[27]

Promoting Carbon Emissions Trading Markets

In 2013, China established pilot carbon emissions trading programs, and a national carbon emissions trading program is expected as part of the 13th Five-Year Plan.[28] Emissions trading programs have been piloted in the cities of Beijing, Tianjin, Shanghai, Shenzhen, Chongqing, Qingdao, and Guangdong as well as the province of Hubei. China will establish a nationwide carbon cap-and-trade program in late 2017 or early 2018, setting a price on carbon in major industrial sectors like power, aluminum, and cement.[29] In 2014, the National Development and Reform Commission published the Interim Measures for Carbon Emissions Trading, providing basic rules for the program.[30]

Enforcement

In 2014, the Chinese government declared a war on pollution and identified environmental quality as one of its top five agenda items. Policies to address climate change are intertwined with this because sources of air pollution such as coal plants are also the major sources of carbon emissions. The government is using political pressure, tighter standards, and accountability to meet its environmental goals. Air pollution has become a defining issue, as evidenced by the Chinese State Council's new air pollution measures, including:

- A policy of rating the performance (and thus determining the career prospects) of every mayor, provincial governor, and state-owned enterprise head on how well they meet their allocated environmental, energy, and climate targets.
- The amended Environmental Protection Law, which went into effect January 1, 2015, and the Air Pollution Prevention and Control Law, enacted on January 1, 2016, allowing enforcement officials to assess much higher fines on polluters.[31,32]
- The January 2014 environmental transparency regulation that requires China's top 15,000 polluters across the power and heavy-industry sectors to report their air and water emissions in real time to environmental authorities, who then publicly release the data.[33]

In 2017, China has intensified its pollution crackdown, collecting over $123.2 million USD in fines from over 18,000 polluting companies, with over 12,000 officials being disciplined for sub-standard environmental performance.[34]

THE ROAD AHEAD

China is already taking strong action to peak its carbon emissions. In fact, the nation could peak its coal consumption—and its carbon emissions—even earlier and at a lower level than thought by experts only a few years ago.[35] China is now a global leader when it comes to international action on climate change. China should work with other key global players, such as the G20, and with Chinese-led institutions, like the new Asian Infrastructure Investment Bank (AIIB), to promote clean energy in developing countries. This will position China as a leader in advancing a strong international climate agenda. China's 2030 commitment should also encourage developed countries to raise their ambitions to be in line with the Paris Agreement's goal to keep global temperature rise below 2 degrees Celsius above preindustrial levels, while making best efforts to limit it to 1.5 degrees.

ENDNOTES

1 European Commission Joint Research Centre, "GHG (CO_2, CH_4, N_2O, F-gases) Emission Time Series 1990–2012 per Region/Country," Emissions Database for Global Atmospheric Research, last updated March 11, 2015, http://edgar.jrc.ec.europa.eu/overview.php?v=GHGts1990-2012.

2 National Bureau of Statistics of China, "Statistical Communiqué of the People's Republic of China on the 2016 National Economic and Social Development," February, 28, 2017. http://www.stats.gov.cn/english/PressRelease/201702/t20170228_1467503.html.

3 National Development and Reform Commission of China, Department of Climate Change, "China Intended Nationally Determined Contribution," June 30, 2015, http://www4.unfccc.int/ submissions/INDC/Published%20Documents/China/1/China's%20INDC%20-%20on%2030%20June%202015.pdf.

4 Depuy, M., and W. Xuan, "China's String of New Policies Addressing Renewable Energy Curtailment: An Update," *Renewable Energy World*, April 18, 2016, http://www.renewableenergyworld.com/articles/2016/04/china-s-string-of-new-policies-addressing-renewable-energy-curtailment-an-update.html.

5 Chen, K., and D. Stanway, "China Sets Cap for Energy Consumption for First Time," Reuters, Global Energy News, March 4, 2016, http://www.reuters.com/article/us-china-parliament- energy-idUSKCN0W703V.

6 "China," Climate Action Tracker, last updated July 3, 2015, http://climateactiontracker.org/countries/china.html.

7 Global Carbon Atlas, "CO2 Emissions," Global Carbon Project, http://www.globalcarbonatlas.org/en/CO2-emissions ( ).

8 The White House, "U.S.–China Joint Presidential Statement on Climate Change," press release, September 25, 2015, www.whitehouse.gov/the-press-office/2015/09/25/us-china-joint- presidential-statement-climate-change.

9 Lin, A., "How China's 13th Five Year Plan Climate and Energy Targets Accelerate Its Transition to Clean Energy," Natural Resources Defense Council (herin after NRDC) Expert Blog, March 13, 2016, https://www.nrdc.org/experts/alvin-lin/how-chinas-13th-ftve-year-plan-climate-and-energy-targets-accelerate-its.

10 Lin, A. "Understanding China's New Mandatory 58% Coal Cap Target." NRDC Expert Blog, March 17, 2017. https://www.nrdc.org/experts/alvin-lin/understanding-chinas-new-mandatory-58-coal-cap-target.

11 Government of China, "National Development and Reform Commission on Issuing the National Climate Change Plan (2014–2020 year) Notice, National Development and Reform Commission, September 19, 2014, www.sdpc.gov.cn/gzdt/201411/t20141104_643314.html.

12 Korsbakken and Peters. "A Closer Look at China's Stalled Carbon Emissions." Carbon Brief. March, 1, 2017. https://www.carbonbrief.org/guest-post-closer-look-chinas-stalled-carbon-emissions.

13 Bo, X., "China Unveils Energy Strategy, Targets for 2020," Xinhuanet, November 19, 2014, http://news.xinhuanet.com/english/china/2014-11/19/c_133801014.htm.

14 Lin, A., "It's Official: China Continued to Reduce Its Coal Consumption in 2015 While Growing Its Clean Energy," NRDC Expert Blog, March 1, 2016, https://www.nrdc.org/experts/alvin-lin/ its-official-china-continued-reduce-its-coal-consumption-2015-while-growing-its.

15 China Energy Portal, Translation of "Guiding opinions on the implementation of the "13th FYP" for renewable energy development", July 29, 2017. https://chinaenergyportal.org/en/guiding-opinions-implementation-13th-fyp-renewable-energy-development.

16 Reuters, "Global clean energy investment falls to $288 billion in 2016: research" January 12, 2017. http://www.reuters.com/article/us-global-renewables-investment/global-clean-energy-investment-falls-to-288-billion-in-2016-research-idUSKBN14W0ZD.

17 Clarke, J.S., "Data: All China's New Power Demand Met by Wind and Solar Last Year," Greenpeace Energy Desk, September 8, 2016, http://energydesk.greenpeace.org/2016/09/08/data- chinas-new-power-demand-met-wind-solar-last-year/.

18 Forsythe, M., "China Aims to Spend at Least $360 Billion on Renewable Energy by 2020", 2017 January, https://www.nytimes.com/2017/01/05/world/asia/china-renewable-energy-investment.html.

19 Korsbakken and Peters. "A Closer Look at China's Stalled Carbon Emissions." Carbon Brief. March, 1, 2017. https://www.carbonbrief.org/guest-post-closer-look-chinas-stalled-carbon-emissions.

20 Lin, A. "Understanding China's New Mandatory 58% Coal Cap Target." NRDC Expert Blog, March 17, 2017. https://www.nrdc.org/experts/alvin-lin/understanding-chinas-new-mandatory-58-coal-cap-target.

21 Finamore, B., "How Capping Coal Can Help China to Peak Its CO_2 Emissions by 2025 and Contribute to the Fight Against Climate Change," NRDC Switchboard, June 12, 2015, http:// switchboard.nrdc.org/blogs/bftnamore/how_capping_coal_can_help_chin.html. "Project Overview," China Coal Consumption Cap Plan and Policy Research Project, NRDC, accessed October 18, 2015, www.nrdc.cn/coalcap/index.php/English/index.

22 Coal Utilization's Contribution to Air Pollution," China Coal Consumption Cap Plan and Policy Research Project, NRDC, October 20, 2014, www.nrdc.cn/coalcap/index.php/English/ project_content/id/448.

23 Green, F., and N. Stern, "China's 'New Normal': Structural Change, Better Growth, and Peak Emissions," Centre for Climate Change Economics and Policy and Grantham Research Institute on Climate Change and the Environment, June 2015,

24 Hill, J. "China Halts Construction On 150 Gigawatts Of New Coal Power Plants." Cleantechnica. April 16, 2017. https://cleantechnica.com/2017/08/16/china-halts-construction-150-gw-new-coal-power-plants/

25 Zhang, C. "China takes another step to reduce coal-fired power." Chinadialogue, March 20, 2017. https://www.chinadialogue.net/article/show/single/en/9678-China-takes-another-step-to-reduce-coal-fired-power

26 The White House, "U.S.-China Joint Presidential Statement on Climate Change."

27 Noah Lerner, HyoungMi Kim and Alvin Lin, "China's Coming Ban on Petrol Vehicles Will Peak Its Oil Use," NRDC.org, September 25, 2017. https://www.nrdc.org/experts/alvin-lin/chinas-coming-ban-petrol-vehicles-will-peak-its-oil-use.

28 Bifera, L., "Carbon Trading in China: Short-Term Experience, Long-Term Wisdom," Center for Climate and Energy Solutions, April 9, 2014, www.c2es.org/blog/bifera/carbon-trading- china-short-term-experience-long-term-wisdom. Tubman, M., "China's Provinces Learn How to Reduce Emissions with Trading," Center for Climate and Energy Solutions, July 9, 2015, www. c2es.org/blog/tubmanm/china%E2%80%99s-provinces-learn-how-reduceemissions-trading.

29 Debra Kahn, "China Is Preparing to Launch the World's Biggest Carbon Market," ClimateWire, August 14, 2017. https://www.scientificamerican.com/article/china-is-preparing-to-launch-the-world-rsquo-s-biggest-carbon-market.

30 International Carbon Action Partnership, "NDRC Publishes Basic Rules for National ETS," December 17, 2014, https://icapcarbonaction.com/en/news-archive/260-ndrc-publishes-basic- rules-for-national-ets.

31 Finamore, B., "New Weapons in the War on Pollution: China's Environmental Protection Law Amendments," NRDC Switchboard, April 24, 2014, http://switchboard.nrdc.org/blogs/bftnamore/new_weapons_in_the_war_on_poll.html.

32 Finamore, B., "How China Is Taking Major Steps to Control Shipping Air Pollution," NRDC Switchboard, September 2, 2015, http://switchboard.nrdc.org/blogs/bftnamore/how_china_is_ taking_major_step.html.

33 Finamore, B., "New Weapons in the War on Pollution: China's Environmental Protection Law Amendments," NRDC Switchboard, April 24, 2014, http://switchboard.nrdc.org/blogs/ bftnamore/new_weapons_in_the_war_on_poll.html. Greer, L., "China Fights Back Against Airpocalypse: A New Air Pollution Initiative That Just Might Work!" NRDC Switchboard, January 12, 2014, http://switchboard.nrdc.org/blogs/lgreer/china_ftghts_back_against_airpocalypse_embarking_on_a_new_air_pollution_initiative_that_just_might_work.html.

34 Gan, N. "12,000 officials disciplined and 18,000 companies punished in China's sweeping crackdown against pollution." South China Morning Post, September 2, 2017. http://www.scmp.com/news/china/policies-politics/article/2109342/top-level-china-pollution-inspections-wrapping.

35 Lin, A., L. Dong, and Y. Fuqiang, "How China Can Help Lead a Global Transition to Clean Energy," Centre for International Governance Innovation, Fixing Climate Governance Policy Brief No. 6, July 22, 2015, www.cigionline.org/publications/how-china-can-help-lead-global-transition-clean-energy.