

# The East Is Green: China's Global Leadership in Renewable Energy

*Dominic Chiu*

## *Introduction*

### **PRESIDENT XI JINPING'S SPEECH**

at the World Economic Forum's meeting in Davos argued for globalization and the international community's need to proactively manage globalization while mitigating its negative effects.<sup>1</sup> He highlighted how China's past decades of reforms are in line with the trend of globalization, and that China is not only its beneficiary but also its benefactor. Most importantly, Xi stated that China is committed to "a fundamental policy of opening-up," pledging explicitly to keep China's doors open to foreign investment and greater economic integration with the world. Although he did not openly advocate for a Chinese role in global leadership, Xi's desire for China to be at the helm of the push toward globalization is implicit throughout his speech.<sup>2</sup> His host, Klaus Schwab, echoed this open secret by remarking that "in a world marked by great uncertainty and volatility the world is looking to China."<sup>3</sup>

Countries, however, are skeptical of Xi's claim that China can become an active global economic leader through open trade and investment. China is increasingly willing to use

economic coercion in conventional sectors such as retail, tourism, and manufacturing to promote its own national objectives.<sup>4</sup> Critics have also pointed to the country's protectionist policies that speak against its claim to continued openness.<sup>5</sup> China has used a "negative list" to bar foreign investment in various sectors for many years<sup>6</sup> and abused ill-enforced trademark laws to discriminate against foreign firms.<sup>7</sup>

Nevertheless, the international community should be assured that China is genuinely interested in leading the world in one particular sector: deployment and investment in renewable energy.<sup>8</sup> China is already leading in renewable energy production figures. It is currently the world's largest producer of wind and solar energy,<sup>9</sup> and the largest domestic and outbound investor in renewable energy.<sup>10</sup> Four of the world's five biggest renewable energy deals were made by Chinese companies in 2016. As of early 2017, China owns five of the world's six largest solar-module manufacturing companies and the world's largest wind turbine manufacturer.<sup>11</sup>

This article will argue for the case of China's future leadership in the sector by examining domestic incentives

for the Chinese government to reduce carbon emissions and pollution, China's ambitious targets in renewable energy investment, the international community's consensus on climate change, geopolitical implications of transitioning to renewable energy, and current government policy toward inbound investment in the sector. In contrast to the United States government's retreating commitment to the industry under President Donald Trump,<sup>12</sup> China has the political incentive, economic capability, and moral consensus needed to lead the global renewable energy sector.

*China has an urgent domestic incentive to invest in renewable energy*

The Chinese government places a priority on investing in renewable energy primarily because it enables the country to tackle problems of air and water pollution, and mitigate risks of socioeconomic instability. Reducing air pollution is a direct reason why the Chinese government promotes renewable energy. The 2005 National People's Congress's (NPC) Environmental Committee observed that fossil fuel energy production and consumption is the cause of 90 percent of the country's sulfur dioxide emissions.<sup>13</sup> In 2013 Tsinghua University and the Asian Development Bank reported that 7 out of the 10 most polluted cities in the world are in China.<sup>14</sup> Studies also point to climate change being a contributor to China's aggravating smog crises.<sup>15</sup>

The economic and health consequences of air pollution are also well researched. RAND Corporation estimated that air pollution in 2012 cost China \$535 billion, or 6.5 percent of its gross domestic product, due to losses in labor productivity.<sup>16</sup> A UC Berkeley study concluded that air pollution led to an estimated 1.6 million deaths a year, roughly 17 percent of all deaths in the country.<sup>17</sup> A University of Chicago report found that suspended particulates air pollution is causing half a billion residents in northern China to lose an average of 5 years of life expectancy.<sup>18</sup>

It is hardly a surprise, therefore, to see air pollution ranked as a top concern for residents in China. A 2015 Pew poll found that air pollution is considered the second-largest problem for residents in China, second only to the issue of government corruption.<sup>19</sup> However, respondents are much more pessimistic about the prospects for air quality improvement: 34 percent of respondents believe that air pollution will worsen in the next five years, while only 18 percent of respondents believed that corruption would worsen.

Dissatisfaction engenders unrest. Chen Jiping, a former leading member of the Communist Party's Committee of Political and Legislative Affairs, said in 2013 that environmental issues are a major reason for mass protests.<sup>20</sup> As maintaining domestic stability is the Communist Party's top priority,<sup>21</sup> Premier Li Keqiang highlighted the need to combat air pollution by developing cleaner sources of energy in multiple State Council and NPC work reports over the years.<sup>22 23</sup>

**The Chinese government places a priority on investing in renewable energy primarily because it enables the country to tackle problems of air and water pollution, and mitigate risks of socioeconomic instability.**

*China has ambitious goals in promoting renewable energy*

China's commitment to invest in renewables is borne out by its large potential for further production and consumption increases. Its *13th Five Year Plan for Electricity (2016–2020)* aims to raise non-fossil fuel's share of total electricity production from 35 to 39 percent by 2020.<sup>24</sup> By 2030,

one-fifth of the country's electricity consumption is forecasted to come from non-fossil fuel sources.<sup>25</sup> According to the International Energy Agency, 36 percent and 40 percent of the world's growth in solar and wind energy in the next five years will come from China.<sup>26</sup> Renewable energy deployment is also a part of a larger effort within China to develop an "ecological civilization,"<sup>27</sup> a cross-industrial approach to lower pollution level and fossil fuel use, mitigate climate change, and improve energy efficiency.<sup>28</sup>

China's National Energy Administration (NEA) and the National Development and Reform Commission (NDRC) also plan to spend more than \$360 billion developing renewable energy and creating 13 million jobs in the sector by 2020.<sup>29</sup> The country's renewable energy workforce far outstrips that of the United States, which in 2016 employed fewer than 800,000 workers in the renewable energy sector.<sup>30</sup> China also leads by investing in a growing number of international renewable energy projects through increasing contributions to multilateral organizations. For example, the BRICS [Brazil, Russia, India, China, South Africa] New Development Bank, of which China is a participant, gave its first round of long-term green loans worth \$811 million last April to fund clean energy projects to its members.<sup>31</sup>

*There are ecological and geopolitical reasons for China's leadership in renewable energy*

Aside from domestic considerations, there are two other reasons why the international community should respond positively to China's leadership in the sector. The first is ecological: China's stated ecological objectives of developing renewable energy are relatively uncontroversial and widely supported for the positive externality its investments in technology and deployment will bring.

This is because there is largely a global consensus on the need to reduce greenhouse gas emissions in order to mitigate the effects of climate change.

Pew polls done in 2015 across 40 nations identify climate change as the top global threat,<sup>32</sup> with 79 percent of respondents of one survey saying that their countries should limit greenhouse gas emissions as part of an international agreement.<sup>33</sup> A unanimous decision to sign the Paris Agreement in 2015 is a formal indication of the international community's commitment to resolving the challenge of climate change. As the world's leading emitter of greenhouse gases,<sup>34</sup> China's transition to renewable electricity production and consumption is crucial to its international commitment to peak carbon dioxide emissions by 2030.<sup>35</sup>

The second reason is strategic: by increasing the proportion of renewable sources in its energy mix for electricity consumption, China can mitigate geopolitical tensions by making the country less reliant on unstable regions for energy security. An energy market dependent on fossil fuels relies on securing oil and gas transportation routes to and from fossil fuel-rich countries, which in turn requires extended military protection. The protection of oil transit choke points was one of the reasons why China constructed its first overseas naval base in Djibouti last year.<sup>36</sup> In contrast, the availability of resources such as wind and sunlight for renewable energy far outstrips that of fossil fuels and is much more evenly spread across different countries.<sup>37</sup>

China's leadership in renewable energy growth will benefit global geopolitics in two ways. First, China will have one less excuse to expand its regional military presence for the sake of energy security as it raises the share of domestically produced renewable energy in its energy mix. Second, as renewable energy usage diffuses globally as an externality from China's development of the sector, more countries will have the potential to become energy producers and hence be less dependent on unstable regions such as Middle East-North Africa (MENA) and Russia for conventional fossil fuels.

This is not to say that there would be no more geopolitical concerns as a result of a renewable-led world electricity market: questions on who controls power lines, intellectual property rights for technologies such as energy storage capacity and grid connectivity, and the availability of raw materials for constructing renewable equipment will still remain.<sup>38</sup> China will also most likely find alternative justifications for expanding its military presence along maritime trade routes. Nevertheless, China's leadership in developing renewable technology should be seen and supported by the international community in the broader context of mitigating both the effects of climate change and of energy security concerns.

*China's foreign investment environment for renewable energy is evolving*

While China has been a leader in market expansion of renewable energy, its openness to foreign investments in importing foreign renewable technology is

more ambiguous. On paper, China welcomes foreign direct investment into the sector. The Chinese Ministry of Commerce's 2017 *Industry Catalogue Guiding Foreign Investment* lists renewable energy an encouraged area for investment, which would allow foreign investors to establish wholly foreign-owned enterprises in the country.<sup>39</sup> A separate 2016 *Catalogue of Encouraged Imported Technology and Products*<sup>40</sup> published by the State Council also grants Chinese companies import purchase discounts<sup>41</sup> for a variety of wind, hydroelectric, geothermal, and solar-related technologies and equipment. Ernst & Young consultants last year ranked China as the world's second-most attractive country for renewable energy investments, behind the United States.<sup>42</sup>

In reality however, it is difficult to assess China's openness to foreign investment into the industry. U.S. renewable energy companies investing in China worry about intellectual property being appropriated without fair compensation, the loss of financial control, and national security.<sup>43</sup> These are valid risks to consider when investing in China, but at the same time evidence is anecdotal and hence difficult to substantiate or to disprove.

What is more certain is that China's technological advances in the sector are changing the incentives for foreign companies to invest in the country. The change takes place in two ways: the first is that other countries could be left behind technologically if they do not partner with China in developing renewable technology. Take solar energy as an example: China has been narrowing the gap with Western countries in developing key components of solar panels in recent years.<sup>44</sup> Trina, a Chinese company and the largest solar panel manufacturer in the world, broke the world record on the efficiency of multicrystalline-silicon solar cells in 2014 and 2015.<sup>45</sup> As China becomes one of the world's foremost developers of renewable technology, the strategic benefits of investing in China and cooperating with the Chinese in research and development might outweigh the costs and risks of potential technology thefts.

China's advances in renewable energy are also changing the nature of foreign investment entering the sector. The country currently relies mainly on bank loans and corporate bonds for financing renewable energy projects, which does not necessarily lead to high-quality results. This is because these traditional methods of financing are more accessible to state-owned enterprises (SOE), and put private companies—usually more capital efficient<sup>46</sup> than their public counterparts—at a disadvantage. Private Chinese companies hence not only need more capital but also need access to more financing channels.

Innovative financing models such as utilizing pension funds, crowd-funding, and direct leasing have already been successfully implemented by renewable energy companies and financiers in the United States.<sup>47</sup> China needs these financing

alternatives that were pioneered and applied in the West,<sup>48</sup> which is why the Chinese government has been attempting to attract foreign financiers to employ these renewable energy investment techniques in the country through bilateral platforms such as the U.S.-China Renewable Energy Partnership.<sup>49</sup> Both the U.S. Department of Energy and China's NEA are participants in the partnership to facilitate cross-border dialogue between companies. Another prominent group involved in the partnership is the American Council on Renewable Energy, a trade association comprising various multinationals and investment banks that possess not only the necessary capital but innovative funding techniques to invest in high-quality renewable energy projects.<sup>50</sup> The evolution of China's renewable technology and foreign investment needs thus presents a significant opportunity for the country to lead the industry by cooperating with foreign investors with more innovating financing methods to implement in its increasingly sophisticated market.

### *Conclusion*

China's commitment to support the development of renewable energy comes at a time when the U.S. administration is proposing to reduce federal funding for environmental research.<sup>51</sup> Government funding is crucial for fundamental research in renewable technology, and President Donald Trump's proposal to cut \$516 million from the Office of Energy Efficiency and Renewable Energy for the rest of the 2017 fiscal year<sup>52</sup> has been chastised by China's *Global Times* as a shirking of the United States' responsibility on climate change.<sup>53</sup>

President Trump's decision to withdraw the United States from the Paris Climate Change Agreement this June was also criticized by China,<sup>54</sup> which restated its commitment to meet its pledged emissions reduction objectives. The U.S. government's retreat from clean energy commitments leaves a global leadership vacuum, engendering further economic and political support from the international community for China's leadership in the sector.<sup>55</sup> The European Union, for example, is already forging an alliance with China to implement the agreement by speeding up the world's transition to clean energy. As renewable energy deployment continues to rise around the world,<sup>57</sup> the alignment of China's capabilities and incentives to invest in the sector positions the country in an even greater leading role for the sector's future.

*Dominic Chiu was a research intern with the William E. Simon Chair in Political Economy at CSIS.*

- 1 Xi Jinping, “President Xi’s speech to Davos,” World Economic Forum, January 17, 2017, <https://www.weforum.org/agenda/2017/01/full-text-of-xi-jinping-keynote-at-the-world-economic-forum>.
- 2 Stephen Fidler, “China’s Xi Jinping Speech Seen as Move to Fill Global Leadership Role,” *Wall Street Journal*, January 17, 2017, <https://www.wsj.com/articles/chinas-xi-jinping-speech-seen-as-move-to-fill-global-leadership-role-1484660546>.
- 3 Noah Barkin and Elizabeth Piper, “In Davos, Xi makes case for Chinese leadership role,” Reuters, January 17, 2017, <http://www.reuters.com/article/us-davos-meeting-china-idUSKBN15118V>.
- 4 Eric B. Lorber, “Economic Coercion, with a Chinese Twist,” *Foreign Policy*, February 28, 2017, <http://foreignpolicy.com/2017/02/28/economic-coercion-china-united-states-sanctions-asia/>.
- 5 Kenneth G. Lieberthal, *Managing the China Challenge: How to Achieve Corporate Success in the People’s Republic* (Brookings Institution Press, 2013), 63.
- 6 Laurie Burkitt and Mark Magnier, “Western Business Groups Troubled by Lack of Details on China Investor List,” *Wall Street Journal*, September 17, 2015, <https://www.wsj.com/articles/western-business-groups-troubled-by-lack-of-details-on-china-investor-list-1442498233>.
- 7 Charles Clover, “China: Monopoly position,” *Financial Times*, January 26, 2015, <https://www.ft.com/content/22704a96-9ff2-11e4-9a74-00144feab7de.s/>.
- 8 This paper focuses on two main types of renewable energy, wind and solar.
- 9 Organization for Economic Cooperation and Development, “Energy—Renewable energy,” <https://data.oecd.org/energy/renewable-energy.htm>.
- 10 Joel Jaeger, Paul Joffe, and Ranping Song, “China Is Leaving the U.S. Behind on Clean Energy Investment,” World Resources Institute, January 6, 2017, <http://www.wri.org/blog/2017/01/china-leaving-us-behind-clean-energy-investment>.
- 11 Michael Slezak, “China cementing global dominance of renewable energy and technology,” *The Guardian*, January 6, 2017, <https://www.theguardian.com/environment/2017/jan/06/china-cementing-global-dominance-of-renewable-energy-and-technology>.
- 12 Chris Mooney, “Trump aims deep cuts at energy agency that helped make solar power affordable,” *Washington Post*, March 31, 2017, [https://www.washingtonpost.com/news/energy-environment/wp/2017/03/31/its-our-central-hub-for-clean-energy-science-trump-wants-to-cut-it-massively/?utm\\_term=.868a2e1c3b65](https://www.washingtonpost.com/news/energy-environment/wp/2017/03/31/its-our-central-hub-for-clean-energy-science-trump-wants-to-cut-it-massively/?utm_term=.868a2e1c3b65)
- 13 “关于《中华人民共和国可再生能源法（草案）》的说明,” National People’s Congress, December 24, 2005, [http://www.npc.gov.cn/wxzl/gongbao/2005-04/25/content\\_5337638.htm](http://www.npc.gov.cn/wxzl/gongbao/2005-04/25/content_5337638.htm).
- 14 Tracy Staedter, “7 of 10 Most Air-Polluted Cities Are in China,” *Seeker*, January 16, 2013, <https://www.seeker.com/7-of-10-most-air-polluted-cities-are-in-china-1766374196.html>.
- 15 Javier C. Hernández, “Climate Change May Be Intensifying China’s Smog Crisis,” *New York Times*, March 24, 2017, [https://www.nytimes.com/2017/03/24/world/asia/china-air-pollution-smog-climate-change.html?\\_r=0](https://www.nytimes.com/2017/03/24/world/asia/china-air-pollution-smog-climate-change.html?_r=0).
- 16 Keith Crane and Zhimin Mao, “Costs of Selected Policies to Address Air Pollution in China” (Santa Monica, CA: RAND Corporation, 2015), 21, [http://www.rand.org/content/dam/rand/pubs/research\\_reports/RR800/RR861/RAND\\_RR861.pdf](http://www.rand.org/content/dam/rand/pubs/research_reports/RR800/RR861/RAND_RR861.pdf).
- 17 Robert A. Rohde and Richard A. Muller, “Air Pollution in China: Mapping of Concentrations and Sources,” *PLoS ONE* 10, no. 8 (2015): 8, <http://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0135749&type=printable>.

- 18 Yuyu Chen, Avraham Ebenstein, Michael Greenstone, and Hongbin Li, "Evidence on the Impact of Sustained Exposure to Air Pollution on Life Expectancy from China's Huai River Policy," *Proceedings of the National Academy of Sciences* 110, no. 32 (2013): 12936, <http://www.pnas.org/content/110/32/12936.full.pdf>.
- 19 Richard Wike and Bridget Parker, "Corruption, Pollution, Inequality Are Top Concerns in China," Pew Research Center's Global Attitudes Project, September 24, 2015, <http://www.pewglobal.org/2015/09/24/corruption-pollution-inequality-are-top-concerns-in-china/>
- 20 "Chinese Anger over Pollution Becomes Main Cause of Social Unrest," Bloomberg, March 6, 2013, <https://www.bloomberg.com/news/articles/2013-03-06/pollution-passes-land-grievances-as-main-spark-of-china-protests>.
- 21 Joshua Berlinger, Steve George, and Serenitie Wang, "Beijing's Smog: A tale of Two Cities," CNN, January 16, 2017, <http://www.cnn.com/2017/01/15/health/china-beijing-smog-tale-of-two-cities/>.
- 22 Li Keqiang, "Report on the Work of the Government," trans, *Wall Street Journal*, 2014, [http://online.wsj.com/public/resources/documents/2014GovtWorkReport\\_Eng.pdf](http://online.wsj.com/public/resources/documents/2014GovtWorkReport_Eng.pdf).
- 23 Li Keqiang, "李克强: 加大环境治理力度 重拳治理大气雾霾," Xinhua, March 5, 2016, [http://news.xinhuanet.com/politics/2016lh/2016-03/05/c\\_135157879.htm](http://news.xinhuanet.com/politics/2016lh/2016-03/05/c_135157879.htm).
- 24 "电力发展 "十三五" 规划 (2016-2020 年)," National Development and Reform Commission, December 2016, <http://www.ndrc.gov.cn/zcfb/zcfbghwb/201612/P020161222570036010274.pdf>.
- 25 Chelsea Harvey, "China vowed to peak carbon emissions by 2030. It could be way ahead of schedule," *Washington Post*, March 7, 2016, [https://www.washingtonpost.com/news/energy-environment/wp/2016/03/07/china-vowed-to-peak-carbon-emissions-by-2030-these-researchers-think-it-could-already-be-there/?utm\\_term=.d02236af2cc0](https://www.washingtonpost.com/news/energy-environment/wp/2016/03/07/china-vowed-to-peak-carbon-emissions-by-2030-these-researchers-think-it-could-already-be-there/?utm_term=.d02236af2cc0).
- 26 Andrew Ward, "Wave of spending tightens China's grip on renewable energy," *Financial Times*, January 6, 2017, <https://www.ft.com/content/37844fa4-d344-11e6-9341-7393bb2e1b51>
- 27 Li Keqiang, "李克强说, 过去一年加强生态文明建设, 绿色发展取得新进展," Xinhua, March 5, 2017, [http://news.xinhuanet.com/politics/2017-03/05/c\\_1120570218.htm](http://news.xinhuanet.com/politics/2017-03/05/c_1120570218.htm).
- 28 "Xi leads ecological civilization," *China Daily*, March 22, 2017, [http://www.chinadaily.com.cn/china/2017-03/22/content\\_28634915.htm](http://www.chinadaily.com.cn/china/2017-03/22/content_28634915.htm).
- 29 "'十三五'期间可再生能源总投资规模将达到2.5万亿元," National Energy Administration, January 5, 2017, [http://www.nea.gov.cn/2017-01/05/c\\_135956835.htm](http://www.nea.gov.cn/2017-01/05/c_135956835.htm).
- 30 "U.S. Energy and Employment Report," U.S. Department of Energy, January 2017, [https://www.energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report\\_0.pdf](https://www.energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report_0.pdf).
- 31 New Development Bank, "BRICS Bank Gives \$811 Million in First Round Green Energy Loans," April 18, 2016, <http://www.ndb.int/media/brics-bank-gives-811-million-first-round-green-energy-loans/>.
- 32 Jill Carle, "Climate Change Seen as Top Global Threat," Pew Research Center's Global Attitudes Project, July 14, 2015, <http://www.pewglobal.org/2015/07/14/climate-change-seen-as-top-global-threat/>.
- 33 Richard Wike, "What the world thinks about climate change in 7 charts," Pew Research Center, April 18, 2016, <http://www.pewresearch.org/fact-tank/2016/04/18/what-the-world-thinks-about-climate-change-in-7-charts/>.
- 34 Johannes Friedrich, Mengpin Ge, and Thomas Damassa, "Infographic: What Do Your Country's Emissions Look Like?," World Resources Institute, June 23, 2015, <http://www.wri.org/blog/2015/06/infographic-what-do-your-countrys-emissions-look>.



- 35 Harvey, “China vowed to peak carbon emissions by 2030. It could be way ahead of schedule.”
- 36 Andrew Jacobs and Jane Perlez, “U.S. Wary of Its New Neighbor in Djibouti: A Chinese Naval Base,” *New York Times*, February 25, 2017, <https://www.nytimes.com/2017/02/25/world/africa/us-djibouti-chinese-naval-base.html>.
- 37 Sergey Paltsev, “The complicated geopolitics of renewable energy,” Taylor & Francis, October 4, 2016, <http://www.tandfonline.com/doi/full/10.1080/00963402.2016.1240476>
- 38 Rick Bosman and Daniel Scholten, “How renewables will transform commercial and (geo)political relations,” *EnergyPost*, November 6, 2013, <http://energypost.eu/renewables-will-transform-commercial-geopolitical-relations/>.
- 39 “外商投资产业指导目录（2017年修订）,” National Development and Reform Commission, June 2017, <http://www.ndrc.gov.cn/zcfb/zcfbl/201706/W020170628553266458339.pdf>.
- 40 “鼓励进口技术和产品目录（2016年版）,” National Development and Reform Commission, November 2016, <http://www.sdpc.gov.cn/fzgggz/gyfz/gyfz/201611/W020161110586331180647.pdf>.
- 41 David Solomon, “Chinese Companies Encouraged to Purchase Foreign Products,” *China Business Review*, January 30, 2017, <https://www.chinabusinessreview.com/chinese-companies-encouraged-to-purchase-foreign-products/>.
- 42 Ernst & Young, “Green bonds: power surge,” (Ernst & Young, October 2016), [http://www.ey.com/Publication/vwLUAssets/EY-RECAI-48-October-2016/\\$FILE/EY-RECAI-48-October-2016.pdf](http://www.ey.com/Publication/vwLUAssets/EY-RECAI-48-October-2016/$FILE/EY-RECAI-48-October-2016.pdf)
- 43 Jeffrey Ball, Dan Reicher, Xiaojing Sun and Caitlin Pollock, “The New Solar System,” (Stanford, CA: Steyer-Taylor Center for Energy Policy and Finance, March 2017), 173, <https://www-cdn.law.stanford.edu/wp-content/uploads/2017/03/2017-03-20-Stanford-China-Report.pdf>
- 44 *Ibid.*, 174.
- 45 *Ibid.*, 64.
- 46 Gabriel Wildau, “China’s state-owned zombie economy,” *Financial Times*, March 1, 2016, <https://www.ft.com/content/253d7eb0-ca6c-11e5-84df-70594b99fc47>.
- 47 Ernst & Young, “Capitalizing on China’s renewable energy opportunities,” (Ernst & Young, 2014), 9, [http://www.ey.com/Publication/vwLUAssets/EY-white-paper-renewable-energy-financing-in-china-en-26dec/\\$FILE/EY-white-paper-renewable-energy-financing-in-china-en-26dec.pdf](http://www.ey.com/Publication/vwLUAssets/EY-white-paper-renewable-energy-financing-in-china-en-26dec/$FILE/EY-white-paper-renewable-energy-financing-in-china-en-26dec.pdf)
- 48 Ball, Reicher, Sun and Pollock, “The New Solar System,” 43.
- 49 *Ibid.*, 154.
- 50 *Ibid.*, 201.
- 51 Jennifer A Dlouhy, “Trump Budget Plan Would Slice EPA Spending by Nearly a Third,” *Bloomberg*, March 16, 2017, <https://www.bloomberg.com/politics/articles/2017-03-16/trump-budget-proposal-would-slice-epa-spending-by-nearly-a-third>.
- 52 Chris Mooney, “Trump aims deep cuts at energy agency that helped make solar power affordable,” *The Washington Post*, March 31, 2017, <https://www.washingtonpost.com/news/energy-environment/wp/2017/03/31/its-our-central-hub-for-clean-energy-science-trump-wants-to-cut-it-massively/>.

- 53 张鹭, “社评: 谁来阻止华盛顿公然推卸气候责任,” *Huanqiu*, March 29, 2017, <http://opinion.huanqiu.com/editorial/2017-03/10398187.html>.
- 54 Te-Ping Chen, “China Pans U.S. Decision on Paris Accord,” *The Wall Street Journal*, June 02, 2017, <https://blogs.wsj.com/chinarealtime/2017/06/02/china-pans-u-s-decision-on-paris-accord/>.
- 55 David Smith, Katy Enders and Dominic Rushe, “EU leads attacks on Trump's rollback of Obama climate policy,” *The Guardian*, March 28, 2017, <https://www.theguardian.com/environment/2017/mar/28/climate-change-eu-leader-trump-executive-order>.
- 56 Chen, “China Pans U.S. Decision on Paris Accord.”
- 57 “Renewable energy use rises with China, EU, India giving world hope,” *Xinhua*, June 10, 2017, [http://news.xinhuanet.com/english/2017-06/10/c\\_136354044.htm](http://news.xinhuanet.com/english/2017-06/10/c_136354044.htm).

