China and the United States: Leading on Climate Action--New Challenges, New Opportunities

Key Questions:

1. How have the joint U.S.-China announcements helped create momentum for global climate action?
2. What steps is China taking toward its goals?
3. Do we have reason to believe that China will follow through on its commitments?
4. What is the benefit of the U.S. and China, and many other countries, taking action together?

Q: How have the joint U.S.-China announcements helped create momentum for global climate action?

In November 2014, the United States and China announced a watershed accord to reduce their greenhouse gas emissions and tackle climate change.[1] The world's two largest emitters, accounting for roughly 40% of global greenhouse gas emissions,[2] came together again in 2015 to announce actions they will take to meet these commitments and articulate a common vision for the landmark global climate change agreement reached in Paris in December 2015.[3] As countries move to join and implement the Paris Agreement, U.S.-China cooperation on climate change has stimulated enhanced action by other countries, subnational governments, businesses and investors worldwide.[4] Many new opportunities for international collaboration on climate have emerged in the last two years, including a public-private partnership to advance clean energy technology through Mission Innovation,[5] an international solar alliance,[6] and city-level coalitions like the Compact of Mayors.[7]

China's Commitments to Address Climate Change

As part of the 2014 U.S.-China joint statement, China committed to reach a peak in its carbon dioxide emissions around 2030 and make best efforts to peak earlier, and to increase the non-fossil fuel share of its energy use to around 20% by 2030.[8] China's June 2015 contribution for the Paris climate agreement formalized these targets, and set additional targets to reduce the carbon intensity (carbon emitted per unit of GDP) of its economy by 60-65%, and increase its forest stock by around 4.5 billion cubic meters, from 2005 levels by 2030.[9] In addition to the national targets, eleven cities and provinces from across China committed to reach a peak in their carbon emissions before the national goal to peak around 2030.[10] This group comprises a quarter of China's urban carbon emissions, roughly equivalent to the total annual carbon emissions of Japan or Brazil.[11]

Q: What steps is China taking toward its goals?

A: China has been taking action to strengthen all the building blocks of its low-carbon strategy, and continues to do so.

Studies that have demonstrated pathways to a peak in China's carbon emissions[12] converge around **several major building blocks**: rebalancing the economy away from heavy industry, limiting coal use,[13] improving energy efficiency, scaling up non-fossil energy, and placing a price on carbon emissions. China's work on its targets demonstrates extensive new effort. As discussed below, China has been taking increasingly strong action in these areas,

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World Resources Institute
10 G St NE
Washington, DC 20002
202-729-7600
www.ChinaFAQs.org

and has announced additional measures, including as part of its national 13th Five Year Plan (2016-2020), released in March 2016.[14] Further details will be elaborated in plans for specific provinces and sectors, such as energy, in the coming months and years. China's ongoing actions and its ambitious goals indicate that it will continue to build on these measures in the coming years.

Economic rebalancing: China is seeking to shift away from its old development model driven by investment in energy-intensive industry toward a new model driven by consumption, services, and advanced manufacturing.[15] This shift should have an emissions reduction benefit.[16] China has set targets to reduce excess steel capacity,[17] and steel and cement production—accounting for roughly 70% of China's industrial emissions[18]—saw marked declines in growth in 2014 and fell in 2015, according to official statistics.[19] The share of services in China's GDP eclipsed industry's share in 2013[20] and rose to 50.5% in 2015, 10% higher than industry.[21]

Limits on coal: China has banned new coal plants in three key industrial regions[22] and, as of early 2014, had targets to reduce or limit coal use in twelve provinces.[23] In 2014, China released a climate plan[24] calling for emissions standards for power plants and energy-intensive industries.[25] This plan includes targets to reduce the industrial sector's carbon intensity to half of 2005 levels by 2020, and for carbon emissions from the steel and cement industries to stabilize at 2015 levels by 2020.[26]

New installation of coal plants in China peaked in 2006 at over 90GW,[27] but since then the number has fallen to under 50GW in 2015.[28] China's coal plant utilization rate fell to 54% of capacity in 2014,[29] and coal-fired power generation has declined in each of the past two years.[30] China's overall coal use fell in physical terms (tonnage) in each of the past two years,[31] while the energy content of coal use leveled off in 2014.[32] In early 2016 the central government suspended or delayed coal plant approvals or construction in most of China's provinces.[33]

Energy efficiency: China has policies to increase energy efficiency across its economy. In 2015 China set a stronger target for the efficiency of new coal plants,[34] and issued guidelines for increased market-oriented measures governing electricity which encourage demand-side management to improve energy efficiency.[35] China has been strengthening and expanding building energy codes[36] and fuel economy standards.[37] Further, the "Top 10,000 Energy-Consuming Enterprises" program under the 12th Five Year Plan incentivized efficiency improvements at 17,000 mostly industrial enterprises accounting for two-thirds of China's energy use.[38]

Clean energy: China was again the world's number one investor in renewable energy in 2015 with $102.9bn, accounting for over a third of global investment.[39] In 2015, China also led the world with record amounts of wind and solar (PV) installations, with 18GW of solar and 29GW of wind.[40] China has been the world leader in installed wind capacity since 2010,[41] and China eclipsed Germany in installed solar capacity in 2015.[42] China has set targets to increase its wind capacity to 200GW[43] and roughly double its solar capacity to 100GW by 2020.[44] While China has faced challenges in ensuring that all of its renewable electricity is used, China has taken a set of measures in early 2016 to address the problem. These steps include establishing management rules to promote the sale of renewable electricity to the grid, and setting electricity generation and consumption targets for non-hydro renewable energy sources.[45]

Pricing carbon: President Xi Jinping announced in September 2015[46] that China will launch a national emissions trading system (ETS) in 2017.[47] An ETS has the potential to be a powerful instrument to reduce emissions over time.[48] While establishing a national ETS involves challenges, China can draw on its experience with its seven existing city- and provincial-level carbon-trading pilots.[49] As China implements the ETS, other policies and actions will remain and also be strengthened to drive emissions reductions. China's government-affiliated research organizations are also discussing possibilities for the design and administration of a carbon tax.[50]

The 13th Five Year Plan

China's national 13th Five Year Plan builds on the above action, and lays out the country's near-term policies and goals to achieve its Paris targets. It is apparent from the plan that China is increasingly integrating climate action into its economic planning. The plan aims for services to rise from 50.5% to 56% of the economy by 2020, and for developing advanced and environmentally friendly manufacturing. The plan also sets targets for energy intensity (15% reduction from 2015 levels), carbon intensity (18% reduction) and non-fossil share of energy use (3% increase to 15%). The new carbon intensity target, if achieved, would allow China to reduce carbon intensity by 48% from 2005 levels by 2020, exceeding its original target of 40-45%. The document sheds light on China's tiered strategy for peaking, suggesting that China's most-developed eastern regions will be the first to peak their carbon emissions. To help achieve these goals, it calls for China to control emissions from energy-intensive industries, set up a national emissions trading system, implement

emissions reporting and verification for key industries, and establish a green finance system.[51]

Q: Do we have reason to believe that China will follow through on its commitments?

A: Yes. China has already made progress on its energy and emissions targets and has strong reasons of national interest to build on its current efforts.

From 2006 to 2011, China **reduced the energy intensity** of its economy by 19%.[52] Over the past five years, according to official figures China **exceeded its targets** for energy intensity (down 18.2%) and carbon intensity (20%).[53]

Uncertainties remain, such as the future trajectory of energy-intensive industries, the rate of industrial energy efficiency gains, and the upward pressure on energy use from trends toward urbanization and increased vehicle ownership.[54] As described above, however, China is taking action to address emissions from each of these sources, and is motivated to build on this action. In light of the action and progress mentioned above, some experts now think that China's carbon emissions will likely peak before 2030,[55] consistent with the government's stated aim to make best efforts to peak early.[56]

China's efforts to achieve its targets are driven by strong national interests. China is working to control coal use to address air pollution. Air pollution contributes to as many as 4,000 deaths in China per day[57]-- and as of 2010, economic losses of about a tenth of its GDP[58]—and has raised widespread public concern.[59] In 2013 China announced a $277 billion investment over five years in curbing air pollution and banned new coal plants in key industrial regions, and in 2014 China adopted amendments to its Environmental Protection Law which charge daily fines for violators and hold local officials accountable for their environmental record.[60] The New Climate Economy China case study estimates considerable economic benefit from reduced air pollution and enhanced energy security associated with peaking of CO2 emissions around 2030.[61]

China's national report on climate change finds that it may "further intensify the occurrence of floods and droughts," threaten agricultural productivity, and increase its low-lying coastal cities' vulnerability to storms.[62] China's top weather official has said that the impacts of climate change are already damaging China's economy.[63] As China is a net importer of fossil fuels,[64] China's leaders are concerned with the country's energy security,[65] and China has already begun to see the economic benefits of clean energy.[66] Further, many of China's heavy industries are facing the problem of excessive production capacity, which hurts profits;[67] China's leaders recognize the need to shift away from energy-intensive industry toward services for economic growth to continue at a strong rate.[68]

Q: What is the benefit of the U.S. and China, and many other countries, taking action together?

A: With countries acting together, each can have confidence its actions are part of a global effort to address climate change. Moving forward together yields increasing opportunities for all.

The 2014 Intergovernmental Panel on Climate Change's report shows that the planet is already experiencing the impacts of climate change,[69] and the effects are projected to become more severe unless serious action is taken soon.[70] It is therefore in the interest of all countries to act to avoid huge costs. Countries might hesitate to act if each country saw everyone else stopping, but that is no longer an issue.[71]
The fact is that all major emitters are taking action, as evidenced by the international climate agreement reached in Paris in December 2015. This agreement represents the beginning of the longer term effort needed by all countries to rein in global average temperature rise. While the action commitments of 150 countries for the Paris Agreement represent an unprecedented global effort to tackle climate change, the world is not yet on track to reach the agreement's stated aim—to limit global temperature rise well below 2 degrees Celsius and strive to limit temperature rise to 1.5 degrees[72]—and avert the most dangerous impacts of climate change.[73] As Presidents Obama and Xi stated in their vision for the Paris Agreement, there must be a longer-range effort ramping up ambition for low-carbon transformation over time.[74]

Countries are already taking steps to implement their commitments, which will be beneficial as countries not only avoid the worst climate change impacts, but reap such gains as improved health, economic growth, and the advantages of technological innovation.[75] In April 2016, a record 175 countries gathered in New York to sign the Paris Agreement.[76] The U.S. and China continue to demonstrate international leadership, jointly stating in March 2016 that both countries would take steps to formally join the agreement as soon as possible this year, and urge other countries to do the same.[77] China has already begun to integrate its Paris pledges into its policy planning—as evidenced by the 13th Five Year Plan—while the U.S. is pressing forward with meeting its Paris target[78] with measures such as regulations on power plants under the Clean Power Plan,[79] tax credits for wind and solar power[80] and standards on methane emissions from new oil and gas infrastructure.[81]

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Increasing Opportunities for International Cooperation

The actions of the U.S. and China have helped create unprecedented movement toward stronger action on climate change around the world. While much more remains to be done, the two countries are continuing to work together in facing challenges and creating opportunities. There are a growing number of examples involving the U.S. and China where there is bilateral or multilateral collaboration on climate beyond the UN Framework Convention on Climate Change, including the Clean Energy Research Center's work on clean technology development,[82] the Climate Change Working Group under the U.S.-China Strategic and Economic Dialogue,[83] and the ongoing negotiations on hydrofluorocarbons--a potent greenhouse gas--under the Montreal Protocol.[84]

New opportunities continue to emerge. September 2015 marked the first convening of the U.S.-China Climate-Smart/Low-Carbon Cities Summit, which gathers again in June of 2016,[85] and this year's G-20 presidential summit in China provides a chance to start integrating climate action into domestic and international financial systems.[86] These efforts will continue to be important in encouraging countries to meet and exceed their Paris goals, reap domestic benefits, and achieve the deep decarbonization necessary to avoid the most dangerous impacts of climate change.

GEOFFREY HENDERSON
ChinaFAQs Project Specialist,
Climate Program
World Resources Institute

PAUL JOFFE
Senior Foreign Policy Counsel,
Climate Program
World Resources Institute

pjoffe@wri.org
(202) 729-7667

Sources

[1] White House Office of the Press Secretary, "FACT SHEET: U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation" (November 11, 2014) https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c; http://www.chinafaqs.org/blog-posts/us-and-china-strike-deal-climate-change-now-youre-talking
[2] As of 2012, China produced 24.5% of global greenhouse gas emissions, while the United States produced 13.9%. U.S. greenhouse gas emissions per capita were 19.86 tons in 2012, compared to 8.13 tons in China. These figures do not include land-use change and forestry. Data obtained from WRI CAIT Historical Emissions database. cait.wri.org/historical
[3] White House Office of the Press Secretary, "FACT SHEET: The United States and China Issue Joint Presidential Statement on Climate Change with New Domestic Policy Commitments and a Common Vision for an Ambitious Global Climate Agreement in Paris" (September 25, 2015) https://www.whitehouse.gov/the-press-office/2015/09/25/fact-sheet-united-states-and-china-issue-joint-presidential-statement
[4] http://www.wri.org/blog/2016/02/4-ways-paris-agreement-supports-climate-action-now
[5] http://mission-innovation.net/
[6] http://www.theguardian.com/environment/2015/nov/30/india-set-to-unveil-global-solar-alliance-of-120-countries-at-paris-climate-summit
[7] http://www.compactofmayors.org/
[8] "FACT SHEET: U.S.-China Joint Announcement" (November 11, 2014)
[9] "Enhanced Actions on Climate Change: China's Intended Nationally Determined Contributions", submitted to UNFCCC June 30, 2015 (scroll to page 17 for English translation) http://www4.unfccc.int/submissions/INDC/Published%20Documents/China/1/China's%20INDC%20-%20on%2030%20June%202015.pdf
[10] "U.S.-China Climate Leaders' Declaration", On the Occasion of the First Session of the U.S.-China Climate-Smart/Low-Carbon Cities Summit, Los Angeles, CA, September 15-16, 2015 https://www.whitehouse.gov/sites/default/files/us_china_climate_leaders_declaration_9_14_15_730pm_final.pdf
[11] White House Office of the Press Secretary, "Fact Sheet: U.S.-China Climate Leaders Summit" (September 15, 2015) https://www.whitehouse.gov/the-press-office/2015/09/15/fact-sheet-us-%E2%80%93-china-climate-leaders-summit
[12] Zhang et al, "Carbon emissions in China" (2014); He Jiankun, Yu Zhiwei and Zhang Da, "China's strategy for energy development and climate change mitigation" (2012) http://www.sciencedirect.com/science/article/pii/S0301421512003370; Kejun Jiang, Xing Zhuang, Ren Miao and Chenmin He, "China's role in attaining the global 2°C target" (2013) http://www.tandfonline.com/doi/abs/10.1080/14693062.2012.746070#.U9vjQ_ldXhA
[13] http://www.reuters.com/article/2014/11/18/us-china-coal-climatechange-idUSKCN0J20XF20141118
[14] http://www.chinafaqs.org/blog-posts/5-questions-what-does-china%E2%80%99s-new-five-year-plan-mean-climate-action
[15] http://www.chinafaqs.org/blog-posts/5-questions-what-does-china%E2%80%99s-new-five-year-plan-mean-climate-action; Fergus Green and Nicholas Stern, "China's changing economy: implications for its carbon dioxide emissions", Climate Policy (2016), accessed 12 April, 2016 http://www.tandfonline.com/doi/full/10.1080/14693062.2016.1156515; China State Council, "'Made in China 2025' plan issued" (May 19, 2015) http://english.gov.cn/policies/latest_releases/2015/05/19/content_281475110703534.htm
[16] Carbon Tracker Initiative, "The Great Coal Cap: China's energy policies and the financial implications for thermal coal" (2014) http://www.carbontracker.org/wp-content/uploads/2014/09/gcp1.pdf
[17] http://www.wsj.com/articles/SB10001424052702304655304579549130649982174
[18] Green and Stern, "China's 'new normal'" (2015)
[19] Data from China's National Bureau of Statistics http://data.stats.gov.cn/english/; NBS, "Statistical Communique of the People's Republic of China on the 2015 National Economic and Social Development". While official statistics have at times been revised, alternative sources provide means of verifying official data. See: Melanie Hart, "Beijing's Energy Revolution is Finally Gaining Serious Momentum", Center for American Progress, December 3, 2015 https://cdn.americanprogress.org/wp-content/uploads/2015/12/02122341/ChinaClimate-brief.pdf
[20] http://www.asiasentinel.com/econ-business/china-cuts-coal-use-dramatically/
[21] National Bureau of Statistics of China (NBS), "Statistical Communique of the People's Republic of China on the 2015 National Economic and Social Development", February 29, 2016. http://www.stats.gov.cn/english/PressRelease/201602/t20160229_1324019.html
[22] http://www.chinafaqs.org/files/chinainfo/ChinaFAQs_short_take.pdf
[23] Li Shuo and Lauri Myllyvirta, "The End of China's Coal Boom—6 Facts You Should Know" (2014) http://www.greenpeace.org/international/Global/international/briefings/climate/2014/The-End-of-Chinas-Coal-Boom.pdf
[24] China National Development and Reform Commission (NDRC), "National Plans to Combat Climate Change (2014-2020)" (in Chinese): http://www.sdpc.gov.cn/gzdt/201411/t20141104_643314.html
[25] http://switchboard.nrdc.org/blogs/bfinamore/another_major_climate_breakthr.html
[26] http://www.scientificamerican.com/article/china-will-limit-pollution-from-steel-and-cement/; NDRC, "National Plans to Combat Climate Change"
[27] China Electricity Council, 1998-2011, Compilation of Statistics of Electric Power Industry (2012) (in Chinese) http://news.bjx.com.cn/html/20130318/423217.shtml
[28] http://www.carbonbrief.org/new-coal-plants-rise-in-2015-despite-falling-consumption
[29] *Ibid.*
[30] Fergus Green and Nicholas Stern, "China's 'new normal': structural change, better growth, and peak emissions. Policy Brief (June 2015) http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2015/06/Chinas_new_normal_green_stern_June_2015.pdf; http://carbon-pulse.com/14356/
[31] National Bureau of Statistics of China, "Statistical Communique of the People's Republic of China on the 2014 National Economic and Social Development", February 26, 2015. http://www.stats.gov.cn/english/PressRelease/201502/t20150228_687439.html; NBS, "Statistical Communique of the People's Republic of China on the 2015 National Economic and Social Development"
[32] https://www.nrdc.org/experts/barbara-finamore/seven-things-you-should-know-about-chinas-coal-consumption
[33] http://www.chinafaqs.org/blog-posts/chinas-1-2-3-punch-tackle-wasted-renewable-energy
[34] "China's Intended Nationally Determined Contributions" (June 2015)
[35] http://switchboard.nrdc.org/blogs/bfinamore/china_power_sector_reform_plan.html
[36] http://www.chinafaqs.org/blog-posts/achieve-its-new-climate-goals-china-must-look-its-buildings
[37] http://www.reuters.com/article/us-china-fuel-quality-idUSKCN0YE18T?mc_cid=79579de500&mc_eid=fa56a301df; "FACT SHEET: The United States and China Issue Joint Presidential Statement" (September 25, 2015)
[38] http://iepd.iipnetwork.org/policy/top-10000-energy-consuming-enterprises-program
[39] Frankfurt School-UNEP Centre/BNEF. 2016. Global Trends in Renewable Energy Investment 2016. http://fs-unep-centre.org/publications/global-trends-renewable-energy-investment-2016
[40] Data compiled for ChinaFAQs using Bloomberg New Energy Finance data accessed on May 20, 2016. The Bloomberg New Energy Finance data is available through a subscription to their desktop database, which can be accessed at: www.bnef.com
[41] http://www.chinafaqs.org/files/chinainfo/ChinaFAQs_Renewable_Energy_Graphical_Overview_of_2015.pdf
[42] Bloomberg New Energy Finance data accessed on May 20, 2016
[43] http://www.chinafaqs.org/files/chinainfo/ChinaFAQs_table_China_climate_energy_targets_0.pdf
[44] http://news.xinhuanet.com/english/2015-10/13/c_134710495.htm
[45] http://www.chinafaqs.org/blog-posts/chinas-1-2-3-punch-tackle-wasted-renewable-energy
[46] "FACT SHEET: The United States and China Issue Joint Presidential Statement" (September 25, 2015); In the joint presidential statement, China also pledged $3.1bn in support for developing countries to address climate change, and to control public investment in high-carbon projects both at home and abroad. See: "U.S.-China Joint Presidential Statement on Climate Change", White House Office of the Press Secretary (September 25, 2015) https://www.whitehouse.gov/the-press-office/2015/09/25/us-china-joint-presidential-statement-climate-change

(Sources continued on next page)

Sources continued

[47] The national emissions trading system will initially include eight industries—petrochemical, power, chemicals, construction material, nonferrous metals, steel, papermaking and aviation. The market will cover companies in these industries with high levels of energy use in recent years. http://www.bloomberg.com/news/articles/2016-01-22/china-plans-to-include-eight-industries-in-carbon-trading-market; Speaking at the Paris climate talks in December 2015, Jiang Zhaoli, Deputy Director General of the Climate Change Division of China's economic planning agency, said that the policy will form a unified market with a common set of rules, and cover nearly 10,000 enterprises in 31 provinces and 4 billion tons of carbon emissions. http://www.chinafaqs.org/blog-posts/paris-china-announces-promising-elements-national-emissions-trading-system

[48] Xiliang Zhang, Valerie J. Karplus, Tianyu Qi, Da Zhang and Jiankun He, "Carbon emissions in China: How far can new efforts bend the curve?" (2014) http://globalchange.mit.edu/CECP/files/document/MITJPSPGC_Rpt267.pdf; Kejun et al, "China's role in attaining the global 2°C target" (2013); http://www.chinadaily.com.cn/bizchina/greenchina/2015-09/09/content_21827844.htm

[49] http://www.chinafaqs.org/blog-posts/emissions-trading-china-first-reports-field

[50] http://www.chinafaqs.org/blog-posts/china%E2%80%99s-low-carbon-strategy-could-carbon-tax-play-role

[51] http://www.chinafaqs.org/blog-posts/5-questions-what-does-china%E2%80%99s-new-five-year-plan-mean-climate-action

[52] Jing Ke et al, "China's Industrial Energy Consumption Trends and Impacts of the Top-1000 Enterprises Energy-Saving Program and the Ten Key Energy-Saving Projects", Lawrence Berkeley National Laboratory (October 2012). https://china.lbl.gov/sites/all/files/lbl-5922e-ep-industrial-energy-trendoct-2012.pdf

[53] Xinhua News Agency, "People's Republic of China National Economic and Social Development Five-Year Plan", March 17, 2016 (in Chinese) http://news.xinhuanet.com/politics/2016lh/2016-03/17/c_1118366322.htm

[54] Green and Stern, "China's changing economy"

[55] Green and Stern, "China's changing economy"; http://www.nytimes.com/2015/09/22/world/asia/fading-coal-industry-in-china-may-offer-chance-to-aid-climate.html?ref=world&_r=2; http://www.smh.com.au/business/china/chinas-economic-shift-promises-to-aid-climate-fight-but-packs-a-commodity-punch-20151005-gk1jz5.html

[56] https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c

[57] http://www.theguardian.com/world/2015/aug/14/air-pollution-in-china-is-killing-4000-people-every-day-a-new-study-finds; http://fortune.com/2014/11/05/the-cost-of-chinas-dependence-on-coal-670000-deaths-a-year/

[58] Global Commission on the Economy and Climate, "Better Growth, Better Climate: The New Climate Economy Report" (2014) http://2014.newclimateeconomy.report/wp-content/uploads/2014/08/NCE-Global-Report_web.pdf

[59] http://www.nytimes.com/2015/12/09/world/asia/beijing-smog-pollution.html

[60] http://www.chinafaqs.org/blog-posts/chinas-new-clean-air-action-plan; http://switchboard.nrdc.org/blogs/bfinamore/new_weapons_in_the_war_on_poll.html

[61] Global Commission on the Economy and Climate, "The New Climate Economy Report: China Case Study—Executive Summary" (2014) http://newclimateeconomy.net/sites/default/files/china-nce-exec-summary-eng_reduced_1.pdf

[62] http://www.nytimes.com/2015/12/01/world/asia/china-climate-change-global-warming.html

[63] http://www.ibtimes.com/climate-change-threatens-chinas-infrastructure-typhoons-floods-drought-increase-1907256

[64] http://www.reuters.com/article/china-economy-trade-coal-idUSL3N14X1TC20160113; http://www.reuters.com/article/china-economy-output-gas-idUSL3N1532HZ; http://www.reuters.com/article/us-china-economy-trade-crude-idUSKCN0UR0DU20160113

[65] http://www.chinafaqs.org/library/issue-brief-why-china-taking-action-clean-energy-and-climate-change; http://www.iea.org/publications/freepublications/publication/oil-and-gas-emergency-policy---china-2012-update.html

[66] http://www.chinafaqs.org/library/issue-brief-why-china-taking-action-clean-energy-and-climate-change

[67] Green and Stern, "China's changing economy"

[68] Green and Stern, "China's 'new normal'" (2015); https://www.whitehouse.gov/the-press-office/2015/09/25/remarks-president-obama-and-president-xi-peoples-republic-china-joint

[69] http://www.wri.org/blog/2014/03/4-takeaways-ipcc-report-reveal-worsening-impacts-climate-change

[70] http://www.wri.org/blog/2014/04/analyzing-ipcc-report-6-things-you-need-know-about-reducing-emissions

[71] For information regarding the leveling of the carbon playing field, see: ChinaFAQs, "Steel production, air pollution, and electricity prices" http://www.chinafaqs.org/blog-posts/steel-production-air-pollution-and-electricity-prices

[72] http://newsroom.unfccc.int/unfccc-newsroom/finale-cop21/

[73] http://switchboard.nrdc.org/blogs/jschmidt/building_a_global_climate_agre.html; http://climateactiontracker.org/news/224/INDCs-lower-projected-warming-to-2.7C-significant-progress-but-still-above-2C-.html; https://www.climateinteractive.org/project-news/press-release-offers-for-paris-climate-talks-would-reduce-warming-by-1c/

[74] "U.S.-China Joint Presidential Statement" (September 25, 2015)

[75] Global Commission on the Economy and Climate, "The New Climate Economy—Overview" (2014) http://2014.newclimateeconomy.report/overview/

[76] https://www.nrdc.org/experts/jake-schmidt/175-countries-sign-paris-agreement-and-many-announce-they-will-formally-join

[77] http://www.chinafaqs.org/blog-posts/us-and-china-sign-join-paris-agreement-year-deepen-cooperation-climate-and-clean-energy; For the Paris Agreement to formally enter into force, at least 55 countries accounting for at least 55% of global greenhouse gas emissions must ratify it. http://www.wri.org/blog/2016/04/when-could-paris-agreement-take-effect-interactive-map-sheds-light

[78] The U.S. pledged to reduce greenhouse gas emissions 26-28% below 2005 levels by 2025, and to make best efforts to reduce emissions by 28%. https://www.whitehouse.gov/the-press-office/2015/03/31/fact-sheet-us-reports-its-2025-emissions-target-unfccc; For analysis of the actions the U.S. is taking to meet its commitment, and the actions it can take going forward, see: http://www.wri.org/blog/2016/01/6-steps-obama-administration-can-take-2016-cement-its-climate-legacy

[79] https://www.epa.gov/cleanpowerplan/clean-power-plan-existing-power-plants

[80] http://rhg.com/notes/renewable-tax-extenders-the-bridge-to-the-clean-power-plan

[81] https://www3.epa.gov/airquality/oilandgas/actions.html

[82] The U.S.-China Clean Energy Research Center is a partnership of researchers from universities, national laboratories, think tanks, and companies in the U.S. and China. CERC researchers are currently working on the development of advanced coal technology, clean vehicles, building energy efficiency, energy and water, and trucks, with the goal of reducing energy use and greenhouse gas emissions. http://www.us-china-cerc.org/about.html

[83] http://www.state.gov/e/oes/rls/rpts/244467.htm

[84] http://www.unep.org/newscentre/default.aspx?DocumentID=26854&ArticleID=35543

[85] http://www.chinafaqs.org/blog-posts/chinese-and-us-cities-states-and-provinces-announce-climate-targets-and-extensive-coopera

[86] http://www.climatechangenews.com/2016/03/24/mark-carney-g20-to-make-green-finance-a-priority/

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