Taking Stronger Action on Climate Change: China and the United States

Key Questions:

1. How have the joint U.S.-China announcements helped create momentum for global climate action?
2. Is it true that under its new commitments, China might avoid doing anything to address climate change until 2030?
3. Is China starting from scratch in trying to fulfill its commitments, or has it already taken steps in this direction?
4. Do we have reason to believe that China will follow through on its commitments?
5. 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 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 anticipated global climate change agreement in Paris this December.[3] These announcements have generated considerable momentum toward enhanced action by other countries, subnational governments, businesses and investors worldwide.

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 percent by 2030.[4] 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 to 65 percent, and increase its forest stock by around 4.5 billion cubic meters, from 2005 levels by 2030.[5] In addition to 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.[6] This group comprises a quarter of China's urban carbon emissions, roughly equivalent to the total annual carbon emissions of Japan or Brazil.[7]

Q: Is it true that under its new commitments, China might avoid doing anything to address climate change until 2030?

A: No. China will need to take stronger near-term action to meet its commitments and has begun to do so.

China has made significant progress in decoupling emissions from economic growth in recent years; still, a greater level of effort will be required to meet its 2030 targets. In 2009, China committed to reduce its carbon intensity by 40 to 45 percent from 2005 levels by 2020.[8] A 2014 study by MIT and China's Tsinghua University found in their Continued Effort scenario that if China were to continue this level of effort, emissions would level off between 2030 and 2040 without a subsequent decline. The Accelerated Effort scenario, which shows emissions leveling off between 2025 and 2035 and slowly declining after that, involves stronger measures well beyond current policies, including a price on carbon beginning in 2015 which rises significantly.[9] Stronger steps will also be needed to achieve the non-fossil target. China will need to install 800-1,000 gigawatts (GW) of non-fossil fuel electricity generation capacity to achieve its 2030 non-fossil energy target,

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

greater than its current coal-fired capacity and almost the total current electricity generation capacity of the United States.[10]

Expert projections[11] of a peak in China's carbon emissions and an increased share of non-fossil energy are supported by **several major building blocks**: scaling up non-fossil energy, limiting coal use,[12] improving energy efficiency, placing a price on carbon, and rebalancing the economy from heavy industry toward services.[13] As discussed below, China has taken significant action, announced further measures, and is working on including additional steps in its upcoming 13th Five Year Plan, to be released early next year.[14]

Q: Is China starting from scratch in trying to fulfill its commitments, or has it already taken steps in this direction?

A: China is already taking action to strengthen all of the building blocks of its strategy to shift to low-carbon energy.

Clean energy: China was the world's number one investor in renewable energy in 2014 with $83.3bn, accounting for nearly a third of global investment.[15] In 2014, China also led the world with record amounts of solar (PV) and wind power installations, with 13GW of solar and 20.8GW of wind.[16] China has been the world leader in installed wind capacity since 2009,[17] and has set targets to roughly double its wind capacity to 200GW[18] and roughly triple its solar capacity to 100GW by 2020.[19]

Limits on coal: China has banned new coal plants in three key industrial regions[20] and, as of early 2014, had targets to reduce coal use in ten provinces.[21] Chinese policy experts say China is considering banning new coal plants starting in 2016[22] and that coal caps will likely cover more provinces under the 13th Five Year Plan.[23] In 2014, China announced a national plan to limit coal consumption to around 4.2 billion tons and at most 62 percent of primary energy use by 2020,[24] and a climate plan 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 90 GW,[27] but since then the number has fallen dramatically to 36GW in 2014.[28] In 2014, China's coal-fired power generation declined. In the same year, the coal plant utilization rate fell to 54% of capacity, on average.[29] Recent signs of a decline in China's coal use[30] and other trends have led some experts to predict that China's coal use may have already reached its structural peak (controlling for cyclical factors)[31] and that China's emissions will likely peak before 2030, consistent with the government's stated aim to make best efforts to peak early.[32]

Energy efficiency: China has policies to increase energy efficiency across its economy. China recently set a stronger target for the efficiency of new coal plants,[33] and issued guidelines for increased market-oriented measures governing electricity which encourage demand-side management to improve energy efficiency.[34] China has been strengthening and expanding building energy codes[35] and fuel economy standards.[36] Further, the "Top 10,000 Energy-Consuming Enterprises" program incentivizes efficiency improvements at 17,000 mostly industrial enterprises accounting for two-thirds of China's energy use.[37]

Pricing carbon: President Xi Jinping recently announced that China will launch a national emissions trading system (ETS) in 2017.[38] An ETS has the potential to be a powerful instrument to reduce emissions over time.[39] While establishing a national ETS involves challenges, China can draw on its experience with its seven existing city- and provincial-level carbon-trading pilots.[40] As China implements the ETS, other policies and actions will remain and also be strengthened to drive emissions reductions.

Economic rebalancing: China is seeking to shift away from its old growth model driven by investment in energy-intensive industry toward a new model driven by consumption, services, and advanced manufacturing.[41] This shift should have an emissions reduction benefit.[42] China has set targets to reduce excess steel capacity,[43] and steel and cement production—accounting for roughly 70% of China's industrial emissions[44]—saw marked declines in growth in 2014 and fell in early 2015, according to official statistics.[45] The share of services in China's GDP eclipsed industry's share in 2013[46] and rose to 49.5% in 2014, 5.8% higher than industry.[47]

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% from 2005 levels.[48] By the end of 2014, China was **on track to exceed** its energy and carbon intensity targets under the 12th Five Year Plan (2011-2015), having reduced its energy intensity by 13.4 percent, and its carbon intensity by 15.5 percent, from 2010 levels.[49]

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 thousands of deaths in China per day[50]—and as of 2010, economic losses of about a tenth of its GDP[51]—and has raised widespread public concern.[52] 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.[53] 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.[54]

China's national report on climate change projects losses in agricultural productivity, decreased food security, and more frequent flooding, which will pose serious risks to China's economy.[55] China's top weather official has said that the impacts of climate change are already damaging China's economy.[56] As China is a net importer of fossil fuels, China's leaders are concerned with the country's energy security,[57] and China has already begun to see the economic benefits of clean energy.[58] Further, China's leaders recognize the need to shift away from energy-intensive industry toward services for economic growth to continue at a strong rate.[59]

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.

The 2014 Intergovernmental Panel on Climate Change's report shows that the planet is already experiencing the impacts of climate change,[60] and the effects are projected to become more severe unless serious action is taken soon.[61] It is therefore in the interests 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.[62] The fact is that all major emitters are taking action. This is the beginning of the longer term effort needed by all countries to rein in global average temperature rise.[63] As Presidents Obama and Xi stated in their vision for the December Paris climate conference, there must be a longer-range effort ramping up ambition for low-carbon transformation over time.[64]

It is evident that these steps to address climate change will be beneficial as countries not only reduce climate change impacts, but reap such gains as improved health and the advantages of technological innovation.[65] As the international negotiations move toward their conclusion this December, the leadership of the U.S. and China has helped create unprecedented movement toward a global climate agreement, sending a signal to the rest of the world that if we keep working together, solutions are within reach.

This fact sheet is a product of ChinaFAQs, a joint project of the World Resources Institute and experts from leading American universities, think tanks and government laboratories. Find out more about the ChinaFAQs Project at: http://www.ChinaFAQs.org/.

Contact

PAUL JOFFE
Senior Foreign Policy Counsel, Climate Program

World Resources Institute
pjoffe@wri.org
(202) 729-7667

GEOFFREY HENDERSON
ChinaFAQs Project Specialist, Climate Program

World Resources Institute
ghenderson@wri.org
(202) 729-7845

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) http://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. http://www.wri.org/our-work/project/cait-climate-data-explorer

[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] "FACT SHEET: U.S.-China Joint Announcement" (November 11, 2014)

[5] "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

[6] "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

[7] 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

[8] http://www.chinafaqs.org/blog-posts/chinas-state-council-unveils-40-45-carbon-intensity-target

[9] One-page summary of report: Tsinghua-MIT China Energy and Climate Project, "An Energy Outlook for China" (2014) http://globalchange.mit.edu/files/document/CECP_2014_Outlook.pdf; full report: 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; Regarding the need for stronger efforts beyond current policies, see also http://www.chinafaqs.org/blog-posts/stronger-commitments-china-and-us-are-breakthrough-international-climate-action

[10] "FACT SHEET: U.S.-China Joint Announcement" (November 11, 2014)

[11] 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 Maio 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

[12] http://www.reuters.com/article/2014/11/18/us-china-coal-climatechange-idUSKCN0J20XF20141118

[13] China National Development and Reform Commission, "China's Policies and Actions on Climate Change" (November 2014), pages 3-8 http://www.sdpc.gov.cn/gzdt/201411/W020141126538031815914.pdf

[14] http://www.chinafaqs.org/blog-posts/making-plans-steps-development-chinas-crucial-13th-five-year-plan

[15] http://www.chinafaqs.org/files/chinainfo/ChinaFAQs_Renewable_Energy_Graphical_Overview_of_2014.pdf

[16] China installed roughly 70 percent more solar capacity in 2014 than any other country had ever installed in a single year. Source: *Ibid.*

[17] *Ibid.*

[18] http://www.chinafaqs.org/files/chinainfo/ChinaFAQs_table_China_climate_energy_targets_0.pdf

[19] http://www.scmp.com/news/china/article/1741419/china-announces-massive-boost-solar-energy-target-help-fight-pollution

[20] http://www.chinafaqs.org/files/chinainfo/ChinaFAQs_short_take.pdf

(Sources continued on next page)

Sources continued

[21] 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
[22] http://www.smh.com.au/business/china/chinas-economic-shift-promises-to-aid-climate-fight-but-packs-a-commodity-punch-20151005-gk1jz5.html
[23] http://www.smh.com.au/environment/fall-in-chinas-coal-use-here-to-stay-leading-expert-says-20151006-gk2dbq.html#ixzz3noVeVOlK
[24] http://www.nytimes.com/2014/11/21/business/energy-environment/china-to-place-limit-on-coal-use-in-2020.html?_r=0
[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/; China National Development and Reform Commission, "National Plan to Cope With Climate Change (2014-2020)" (in Chinese) http://www.sdpc.gov.cn/gzdt/201411/t20141104_643314.html
[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] 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
[29] *Ibid.*
[30] Green and Stern, "China's 'new normal'" (2015); http://energydesk.greenpeace.org/2015/09/09/china-coal-demand-falls-for-eleven-straight-months/; John A. Mathews and Hao Tan, "A 'Great Reversal' in China? Coal continues to decline with enforcement of environmental laws" (August 2015) http://www.japanfocus.org/-Hao-Tan/4365/article.html
[31] E.g. variation in hydroelectric power generation due to hydrological conditions
[32] Green and Stern, "China's 'new normal'" (2015); http://www.nytimes.com/2015/09/22/world/asia/fading-coal-industry-in-china-may-offer-chance-to-aid-climate.html?ref=world&_r=1; http://www.smh.com.au/business/china/chinas-economic-shift-promises-to-aid-climate-fight-but-packs-a-commodity-punch-20151005-gk1jz5.html
[33] "China's Intended Nationally Determined Contributions" (June 2015)
[34] http://switchboard.nrdc.org/blogs/bfinamore/china_power_sector_reform_plan.html
[35] http://www.chinafaqs.org/blog-posts/achieve-its-new-climate-goals-china-must-look-its-buildings
[36] http://www.reuters.com/article/2013/03/21/china-auto-fuel-idUSL3N0CC2EK20130321; "FACT SHEET: The United States and China Issue Joint Presidential Statement" (September 25, 2015)
[37] http://iepd.iipnetwork.org/policy/top-10000-energy-consuming-enterprises-program
[38] The ETS will initially cover key energy-intensive industries such as iron and steel, power generation, chemicals, building materials, paper-making, non-ferrous metals, and cement. Source: "FACT SHEET: The United States and China Issue Joint Presidential Statement" (September 25, 2015); According to a statement by China's economic development planning agency in 2014, some provinces will be allowed to delay participation in the emissions trading system if they do not have the technical infrastructure to participate from the beginning. http://www.nytimes.com/2014/09/01/business/international/china-plans-a-market-for-carbon-permits.html?ref=business&r=1; In the joint presidential statement, China also pledged $3.1bn in support for developing countries to address climate change, and to control 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
[39] Zhang et al, "Carbon emissions in China" (2014); 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
[40] http://www.chinafaqs.org/blog-posts/emissions-trading-china-first-reports-field
[41] https://www.whitehouse.gov/the-press-office/2015/09/25/remarks-president-obama-and-president-xi-peoples-republic-china-joint; http://www.brookings.edu/research/articles/2014/07/15-sino-shift-dollar; Green and Stern, "China's 'new normal'" (2015); 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
[42] Carbon Tracker Initiative, "The Great Coal Cap: China's energy policies and the financial implications for thermal coal" (2014) http://www.carbontracker.org/report/the-great-coal-cap-chinas-energy-policies-and-the-financial-implications-for-thermal-coal/
[43] http://www.wsj.com/articles/SB10001424052702304655304579549130649982174
[44] Green and Stern, "China's 'new normal'" (2015)
[45] Data from China's National Bureau of Statistics http://data.stats.gov.cn/english/; http://uk.reuters.com/article/2015/05/13/uk-china-economy-output-coal-idUKKBN0NY0JF20150513
[46] http://www.asiasentinel.com/econ-business/china-cuts-coal-use-dramatically/
[47] National Bureau of Statistics of China, "China's Economy Showed Moderate but Steady Growth" (15 July 2015) http://www.stats.gov.cn/english/PressRelease/201507/t20150715_1214964.html
[48] 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
[49] http://www.wri.org/blog/2015/09/china%E2%80%99s-climate-policies-how-have-they-performed-and-where-do-they-need-go
[50] 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/
[51] 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
[52] http://www.reuters.com/article/2015/04/14/us-china-environment-protest-idUSKBN0N30BK20150414; http://www.forbes.com/sites/forbesasia/2015/06/22/environmental-protests-expose-weakness-in-chinas-leadership/
[53] 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
[54] 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
[55] http://www.reuters.com/article/2012/01/18/us-china-climate-idUSTRE80H06J20120118
[56] http://www.ibtimes.com/climate-change-threatens-chinas-infrastructure-typhoons-floods-drought-increase-1907256
[57] 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
[58] http://www.chinafaqs.org/library/issue-brief-why-china-taking-action-clean-energy-and-climate-change
[59] 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
[60] http://www.wri.org/blog/2014/03/4-takeaways-ipcc-report-reveal-worsening-impacts-climate-change
[61] http://www.wri.org/blog/2014/04/analyzing-ipcc-report-6-things-you-need-know-about-reducing-emissions
[62] 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
[63] All countries will need to do more than their current commitments. 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 limit global temperature rise below 2 degrees Celsius and avert the most dangerous impacts of climate change. 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/
[64] "U.S.-China Joint Presidential Statement" (September 25, 2015)
[65] Global Commission on the Economy and Climate, "The New Climate Economy—Overview" (2014) http://2014.newclimateeconomy.report/overview/

v4.0 Published October 19, 2015, revised 12/2/2015