



Primer on Beijing's Slice-and-Dice Approach to Energy and Climate Reform

By Melanie Hart July 7, 2014

Whenever U.S. and Chinese government officials meet to discuss opportunities for cooperation on energy and climate change, those discussions often boil down to questions about timing, at least from the U.S. perspective. American officials want to know: When will Chinese coal consumption finally peak and begin to decline? When will China's greenhouse gas emissions finally peak and begin to decline? When will Beijing overcome its crippling pollution problems? When will China no longer consider itself to be a developing nation that should receive special allowances in global climate negotiations?

Climate change advocates around the world would like Chinese officials to respond to these questions by putting clear dates on the table. If they did, then climate modelers could analyze those dates—such as the year Beijing expects China's annual greenhouse gas emissions to stop growing—to figure out how terrified the rest of the world should be about China's likely future impact on global warming. However, once Chinese officials start providing more answers to these and other important timing questions, those answers will probably be more complex than foreign observers expect.

Foreign observers tend to view China as a monolithic entity and look for indicators of energy and climate progress for the nation as a whole. From Beijing's perspective, however, the reality inside China is anything but monolithic. China is a hodgepodge of regional economic zones that vary widely in their development levels, in their industrial specialization, energy needs, and emission profiles. Different Chinese regions have different capabilities on the energy and climate front. Some are already rebalancing their local economies toward higher valued-added, energy-efficient industries that can provide income without polluting the environment. Chinese officials in those regions are more willing to support aggressive energy and climate action. Other areas, however, are still struggling to succeed at the lower end of the value chain and still believe that environmental protection is a goal that should be put off for a more financially convenient future.

China's economic diversity is driving Beijing to move toward a slice-and-dice policy approach that divides the nation into segments and puts some segments ahead of others based on their current development status and their willingness to take on more ambitious reform. That approach is perfectly logical when viewed through the lens of China's domestic political system. From a U.S. perspective, however, it means climate negotiators are going to have to do some deciphering to figure out whether Chinese leaders are doing enough at home to fulfill their climate change responsibilities abroad. Certainly, the United States should acknowledge China's unique domestic conditions and seek to better understand why Beijing is employing some reform strategies over others. However, American officials should also keep a close eye on that process to make sure Beijing does not try to utilize China's internal complexities to deflect the growing international pressure over China's global carbon footprint.

This issue brief will outline recent Chinese policy developments and highlight some of the challenges and opportunities that this slice-and-dice approach creates for the United States.

China's new leaders up and running on an energy policy treadmill

By any measure, China's renewable energy markets are booming, and based on those statistics alone, it would appear at first glance that China is doing wonderfully on energy policy reform. The past year was particularly impressive. Of the 94 gigawatts of new power capacity added to China's electric grid in 2013, almost 60 percent came from grid-connected hydropower, wind, and solar.¹ New coal and other thermal power projects accounted for just 38 percent.² For the first time in Chinese history, renewable energy expansion outpaced coal expansion. Renewable energy leapt ahead because investors sunk \$54.2 billion into the Chinese renewable market in 2013; this kept China in the number one investment slot and well ahead of the United States, which came in a distant second at \$36.7 billion.³

Despite China's impressive 2013 renewable energy surge, coal still accounts for around 65 percent of China's overall energy consumption.⁴ The problem is that coal already has a huge lead, and China's energy demand is growing so rapidly that it is all Beijing can do to keep renewable expansion on pace with the new growth. China adds the equivalent of the entire national electric capacity of South Korea—82 gigawatts in 2012—or the United Kingdom—93 gigawatts in 2012—to its grid every year.⁵ Rolling out enough renewable energy projects to cover a majority of the new demand every year is arduous enough. Rolling out enough renewable projects to not only meet new demand but also replace the nation's existing fossil-fuel capacity is an even more difficult task.

Despite these difficulties—which must make Chinese leaders feel like they are formulating energy policy while running on a treadmill—they are trying to make this happen. China’s central government has a target in its 12th five-year economic plan—which covers 2011 to 2015—to increase the percentage of non-fossil fuels in the nation’s energy mix from 8.6 percent in 2010 to 11.4 percent by 2015.⁶ Since it is already 2014, Beijing should be nearing completion on this goal. Unfortunately, that is not the case. In 2011, the non-fossil share of China’s energy mix actually decreased and fell below 2010 levels. It climbed back up through 2012 and 2013 to hit 9.8 percent at year-end 2013.⁷ China is now moving in the right direction, but at this point, it has only progressed a third of the distance it needs to cover by year-end 2015, and it has less than 18 months left to close the gap.

Greenhouse gas emissions are following a similar trajectory. China has a 12th five-year plan target to reduce emission intensity—meaning greenhouse gas emissions per unit of gross domestic product, or GDP—by 17 percent by 2015.⁸ Just as with the non-fossil target, there was some backsliding in 2011 followed by slow progress through 2012 and 2013. As of year-end 2013, the overall carbon intensity of the Chinese economy has fallen about 10 percent from 2010 levels.⁹ Coal consumption growth was unusually sluggish in 2012, so China should be ahead of the curve on emission intensity. Instead, China is falling behind and must steepen the curve to pull off an additional 7 percent intensity reduction by year-end 2015. In fall 2013, China’s National People’s Congress Financial and Economic Affairs Committee conducted a mid-cycle review on progress under the 12th five-year plan and sounded an alarm on these and other sluggish energy and climate targets.¹⁰

What this means for Chinese leaders is that existing policy reforms are not getting them to where they need to be, and if not corrected, that could have big consequences. At the international level, China has an existing Copenhagen target to reduce emission intensity—defined as emissions per unit GDP—40 percent to 45 percent by 2020.¹¹ The 17 percent emission intensity target under the 12th five-year plan is supposed to get China nearly half of the way to that Copenhagen goal. If Beijing comes up short on emission intensity improvements in 2015, major course corrections will be needed in China’s 13th five-year plan—covering 2016 to 2020—to meet that nation’s Copenhagen commitment. More importantly from a Chinese perspective, China desperately needs to rebalance its energy economy to improve environmental conditions, reduce the energy security vulnerabilities associated with the country’s growing dependence on imported fossil fuels, and reach a more sustainable resource allocation for industrial production. Slow progress on the benchmark 2015 energy and climate targets points toward a likely delay in meeting all of those critical objectives.

Beijing's multi-track approach to electricity price reform

What is really holding China back is its state-controlled pricing system. China still has not made the full transition from Soviet-style central planning to a more market-based system that allows energy prices to fluctuate based on supply and demand. China's National Development and Reform Commission, or NDRC, still keeps a firm grip on energy prices throughout the value chain. Beijing uses those controls to artificially suppress electricity prices for Chinese industrial producers and household consumers, which protects those interest groups from price fluctuations in global commodity markets but also creates damaging incentives. Most importantly, since energy is artificially cheap, everyone tends to over use it and that drives up Chinese demand and Chinese emissions. That also makes it very difficult—if not impossible—for new fuel sources and new technologies to gain significant market share because there are no price incentives for power producers and utility companies to invest in efficiency improvements.

One of the most important steps China will have to take to reduce its coal dependence is a roll back of electricity subsidies. The difficulty with price reform, however, is figuring out how to avoid disadvantaging the lower-income sectors of the economy that are not yet able to survive on higher prices. Beijing is getting around that obstacle by dividing the nation into consumption brackets. Electricity consumption almost perfectly tracks development status. Wealthier households have bigger homes and more appliances, so they consume more energy. In July 2012, Chinese leaders shifted their entire residential electricity pricing system from a single-rate pricing scheme to a three-tier scheme that charges higher rates to households that consume higher amounts of electricity per month.¹² Three-tiered pricing allows Beijing to expose the more developed, higher-income areas of the country to more liberalized pricing while still keeping a price buffer in rural areas and other less-developed regions.¹³

Beijing is now working to extend that same three-tiered pricing model to the industrial sector. In January 2014, China extended three-tiered pricing to cover the aluminum-smelting industry, and there is talk about further extensions to cover cement production and other energy intensive industries.¹⁴ On the industrial side, three-tiered pricing basically levies a tax on less-efficient businesses, and that will drive some firms to dramatically alter their production processes or even shut down completely. Beijing is concerned that many of the nation's energy-intensive industries are currently in overcapacity. They are producing more than they would under natural market conditions—partly due to the nation's subsidized electricity rates—and that is a drain on the Chinese economy.¹⁵ Raising electricity rates in those sectors allows central planners to kill two birds with one stone.

One big question that remains unanswered is how much China's electricity prices will have to increase to accurately reflect energy production, transmission, and distribution costs. China's central planners currently have a hard time determining exactly how much subsidization is actually going on under the current model. China has a massive state-

owned utility company—the State Grid Corporation of China—that controls electricity transmission, distribution, and sales for around 90 percent of the Chinese market by territory.¹⁶ State Grid has more than 1 billion customers and runs so many side businesses that the company’s operating costs for any single piece of the value chain are a black box. The energy regulators that are supposed to be overseeing State Grid and setting electricity prices cannot figure out its cost structures; and they cannot trust the answers that they get from State Grid officials because the company has strong incentives to report inflated cost estimates so that it can beg for favorable pricing structures and other subsidies from the central government.

To move forward with real price liberalization, Beijing is going to have to go after this monopoly producer.¹⁷ Chinese regulators intended to do exactly that more than a decade ago, but State Grid fought hard against those changes. Moreover, it is a political heavyweight with plenty of influence in Beijing. Major change now appears to be in the pipeline, however. The new leadership team of President Xi Jinping and Premier Li Keqiang restructured China’s electricity regulator in March 2013, and those regulatory changes appear to be a precursor to a subsequent restructuring on the operations side, which would likely entail a fragmentation of State Grid.

President Xi has also launched a major anticorruption campaign that is conveniently taking down an entire network of incumbent energy regulators. The biggest takedown on the electricity side was former National Energy Agency head Liu Tienan. Liu was removed from his post in early 2013 and subsequently indicted on corruption charges and expelled from the Chinese Communist Party.¹⁸ Since April 2014, party leaders have launched corruption investigations against another five high-level energy officials, including the vice director of the electricity department.¹⁹ A smaller-scale corruption crackdown preceded the last wave of electricity sector reform back in 2002, so the smart money is on a second wave of utility sector reforms coming down in the very near future.

Pricing in China’s commodity markets is much more transparent than the utility side, and commodity pricing can be used as a metric to gauge how far off the nation’s energy prices are in general from market rates. Coal prices have been liberalized, but oil and natural gas prices have not, and the gap between market prices and state-controlled prices in those sectors suggests that there is still plenty of adjusting to do. Last year, the National Development and Reform Commission raised nonresidential natural gas prices by 15 percent in an effort to move that sector closer to market liberalization.²⁰ Even after the summer 2013 price bump, however, domestic wholesale prices for nonresidential users are still running around 17 percent to 20 percent below what Chinese importers pay to buy natural gas on the global market.²¹ That price gap makes natural gas a losing business in China and severely limits its ability to replace coal. State-owned PetroChina brought in two-thirds of China’s natural gas imports last year and lost \$7.9 billion on those imports due to China’s domestic price controls.²²

In a move to ease those losses, the National Development and Reform Commission recently announced that it will move the residential side of the market from single-rate to three-tier natural gas pricing by year-end 2015.²³ Just like the new three-tier rate system for electricity pricing, that approach will allow Beijing to gradually start exposing higher-income households to higher natural gas rates while keeping the subsidies in place at the lower end of the economic ladder.

Multi-track approach to air-pollution reform

Chinese leaders are navigating a difficult balance on the timing of these and other energy price reforms. China needs to liberalize resource prices to shift its economy toward a more sustainable development model. But if it does that too quickly, such a move could send growth rates plummeting. Even when price reforms unfold along a multi-track system that is sensitive to income disparities, those reforms must still march in lockstep with overall economic rebalancing. On the industrial side, raising energy prices will make heavy industry less competitive in China. That will drive firms out of business in energy-intensive sectors such as aluminum smelting, steel smelting, and concrete production. Chinese leaders need to make sure that decreasing economic activity in those sectors occurs in parallel with increasing activity in more energy efficient sectors such as higher-end technology manufacturing and financial services. There are reform efforts underway to stimulate growth in those preferred industries, but that is a major undertaking that cannot be achieved overnight. Similar dynamics apply on the consumer side. Beijing cannot allow household energy price reform to get out too far ahead of increases in consumer buying power. Boosting consumer income is a big focus of China's overall rebalancing strategy, but those changes take time.

If economic factors were the only motivation behind energy reform, Beijing would probably move very slowly. That is exactly what it did during the last administration under former President Hu Jintao and former Premier Wen Jiabao.

The new leadership team headed by President Xi Jinping and Premier Li Keqiang has an entirely new dimension of this problem to deal with: mounting citizen discontent over urban air pollution. China suffered a wave of air-pollution crises in late 2011 that fundamentally altered the Chinese Communist Party's political calculus on the balance between pushing ahead with economic growth at all costs versus tightening regulatory enforcement to reign in environmental pollution.²⁴

Before November 2011, Chinese citizens generally accepted the central government's so-called "blue-sky day" approach to air-pollution monitoring. Using that approach, Chinese environment officials monitored particulate matter, or PM, pollution down to the 10 micrometer level—PM 10 pollution—and declared the day to be either a "blue-sky day" or not based on the density of particulates in the air.²⁵ Local govern-

ments aimed to achieve a certain percentage of blue-sky days per year. They generally achieved those targets and reported their successes with great fanfare. The problem was this system and approach had a major shortcoming: Particulates measuring 10 micrometers and above are only a small part of the problem when it comes to the health damage from air pollution. The United States and other developed countries measure and report pollution down to the 2.5 micrometer level—PM 2.5 pollution—because those smaller particulates penetrate deeper into the lungs and are much more dangerous for public health. China’s monitoring system ignored those smaller particles. Environmental officials monitored PM 2.5 pollution densities in some areas, but those data were classified and not available to the public.

Since China’s blue-sky system did not account for all of the particulates that were fouling the air, officials would often declare a blue-sky day when it was very apparent to local citizens that the sky was anything but blue. That created a certain amount of skepticism regarding the accuracy of those readings. Skepticism escalated when more and more Chinese citizens began to realize that the U.S. embassy in Beijing was tracking local air pollution via a roof-top monitoring device and sharing those readings on the embassy’s twitter feed. Those twitter reports were using U.S. Environmental Protection Administration standards that include particulates down to the 2.5 micrometer level and rate air quality on a scale ranging from “good” to “hazardous” based on particulate density.²⁶ Local citizens began to notice that there were many days rated simultaneously as a blue-sky day by Chinese officials but as dangerous to public health under the U.S. system.²⁷

Public sentiment escalated from skepticism to fury in late 2011 when Beijing was hit by a series of pollution crises so bad that planes could not depart from local airports. The U.S. system translates PM 2.5 readings into an Air Quality Index that tops out at 500, but conditions had blown past those levels and were officially off the charts.²⁸ Chinese environmental officials tried to downplay the crisis and claimed that the less alarming Chinese measurements based on only PM 10 readings were more accurate. Due to the severity of the crisis at that particular point in time—which was obvious even to casual observers—public sentiment turned against the central government.²⁹ Chinese citizens took to the Internet in droves and demanded that their leaders start reporting air quality down to the PM 2.5 level.³⁰ Even China’s state-run press echoed the call for more accurate public reporting.³¹

In response to rising citizen discontent, Chinese leaders made a monumental decision to change course and begin monitoring PM 2.5 air quality data and sharing that data with the Chinese public. The importance and ramifications of this shift must not be underestimated. Once Chinese citizens were empowered to see for themselves how bad the local air was and exactly what that meant for public health, the central government had no choice but to do something about those problems, and quickly.

At the same time, however, Beijing is still constrained by the economic factors mentioned above, particularly in the still-developing inland and western provinces where local enterprises face a bigger uphill struggle to move over into more energy-efficient industries. Beijing has responded to those conflicting regional demands by rolling out another special reform track that tightens air quality regulations in the nation's metro areas—cities at the prefecture level and above—calls for particularly aggressive improvements in the three biggest and most economically advanced urban clusters along the eastern seaboard and allows the rest of the nation to continue on a much slower reform track, at least in the near term.

Once Chinese leaders decided to cede to their citizens' demands and start publicizing PM 2.5 air-pollution data, they immediately started tightening the regulatory environment to demonstrate that they were not only sharing data but also taking action to improve conditions. Since early 2012, the central government has rolled out a staggering array of regulatory reforms that aim to achieve three main objectives:

1. Gradually expand pollution monitoring and public disclosure systems so that all urban residents can view local air-pollution data in real time, including PM 2.5 data:

This system is rolling out in a three-stage process. Stage one was completed in 2012, when the first group of 74 cities began monitoring air pollution and sharing the data with local citizens via the Internet, television, and radio. Stage two was completed when 113 environmental test cities began broadcasting by year-end 2013. Stage three is currently underway and will continue through 2016. By 2016, all Chinese cities at the prefecture level and above will be broadcasting air-pollution data in real time, including PM 2.5 data.³² Central government officials review monitoring data throughout the year and issue public reports that rank participating cities according to their air quality. Central government officials determine which cities must participate in this program and on what timeline.

2. Establish new air quality standards and targets that will serve as new benchmarks for regulatory improvements: Chinese leaders have issued the nation's first PM 2.5 standards, as well as new 2017 reduction targets for PM 10, PM 2.5, sulfur dioxide, nitrogen oxide and industrial soot.³³

3. Reduce transport emissions, thermal power emissions, and industrial emissions in major metropolitan areas to improve air quality and meet the new benchmarks: Key policies include new low-sulfur fuel standards and a phase out of industrial kilns, smelters, and inefficient coal plants.³⁴

When you add up all of the reforms that have taken place since early 2012, it amounts to a huge amount of regulatory activity in a very short amount of time. It is clear that the public pressure concerning air pollution is being felt by China's political leaders in Beijing. What is not yet clear, however, is how much all of this regulatory activity is actually going to move the ball on air quality and how fast.

As with most Chinese regulations, questions and loopholes abound. For example, China's new Action Plan for Air Pollution Prevention and Control orders the city of Beijing to bring local fine particulate—PM 2.5—air pollution down to an average annual concentration of 60 micrograms per cubic meter by 2017. That is well above the nation's new ambient air quality standard of 35 micrograms per cubic meter, which was supposed to take effect in Beijing starting in 2012.³⁵ Clearly, Beijing did not meet the 2012 target and is not expected to do so until well beyond 2017. Local environment officials report that they may not bring PM 2.5 pollution down to the 35 micrograms per cubic meter standard until 2030.³⁶ That raises the question of who is determining what the level of local government ambition needs to be to meet these targets and whether they will be allowed to slide by just by showing some degree of gradual improvement. The rate of improvement across all pollutant categories should be watched very closely, because that will be an indicator of how much of an impact these new regulatory changes will have on China's overall greenhouse gas emissions.

Timeline: China's new wave of air-pollution reforms

February 2012: the Ministry of Environmental Protection and the State Administration of Quality Supervision and Quarantine issue new "Ambient Air Quality Standards" that include China's first official standard for PM 2.5 pollution—small particulate matter particles distinct from large particles and PM 10.³⁷ Under the new guidelines, PM 2.5 pollution concentrations should not exceed a daily average of 75 micrograms per cubic meter and an annual average of 35 micrograms per cubic meter.³⁸

May 2012: Environmental Ministry issues "Implementation Plan for Stage 1 Monitoring under the New Air Quality Standards," which orders 74 cities to begin publicly releasing PM 2.5 air-pollution monitoring data by December 2012.³⁹

October 2012: State Council issues "12th Five-Year Plan for Air Pollution Prevention and Control in Key Regions," which orders 117 Chinese cities to achieve air quality improvements by 2015. The Beijing/Tianjin/Hebei region, the Pearl River Delta, and the Yangtze River Delta are ordered to make the most ambitious improvements, including a 6 percent reduction in PM 2.5 concentrations, a 12 percent reduction in sulfur dioxide, a 13 percent reduction in nitrogen oxide, and a 10 percent reduction in industrial soot.⁴⁰

February 6, 2013: State Council issues new timeline for an accelerated nation-wide transition to low-sulfur diesel and gasoline. The nation must transition to a not-yet-issued 50 parts-per-million low-sulfur diesel standard—called China IV diesel—by year-end 2014 and a not-yet-issued 10 parts-per-million low-sulfur diesel standard—called China V diesel—by year-end 2017.⁴¹ The nation must transition to an existing but not-yet-implemented 50 parts-per-million low-sulfur gasoline standard—called China IV gasoline—by year-end 2013 and a not-yet-issued 10 parts-per-million low-sulfur gasoline standard—called China V gasoline—by year-end 2017.⁴²

February 7, 2013: Standardization Administration issues China IV low-sulfur—50 parts-per-million maximum—diesel standard.⁴³

March 2013: Environmental Ministry issues “Implementation Plan for Stage 2 Monitoring under the New Air Quality Standards,” which orders an additional 113 cities to begin monitoring and publicly releasing PM 2.5 air-pollution data by the end of the year.⁴⁴

June 2013: Standardization Administration issues China V low-sulfur—10 parts-per-million maximum—diesel standard.⁴⁵

September 2013: State Council issues first “Action Plan for Air Pollution Prevention and Control,” which requires all cities at the prefecture level and above to phase out inefficient coal boilers and achieve a 10 percent cut in average annual PM 10 air pollution by 2017.⁴⁶ Eastern metropolitan areas must achieve more ambitious improvements. PM 2.5 pollution must fall 25 percent in the Beijing/Tianjin/Hebei area, 20 percent in the Yangtze River Delta, and 15 percent in the Pearl River Delta. Coal use should peak in those three regions by 2017, and construction of most new coal-fired power plants will be banned from 2017 onward.

December 2013: Standardization Administration issues China V low-sulfur—10 parts-per-million maximum—gasoline standard.⁴⁷

January 2014: Beijing Municipal People’s Congress passes “Beijing Municipal Regulations for Air Pollution Prevention,” which include China’s first legal requirements to reduce PM 2.5 air-pollution density.⁴⁸

May 2014: Environmental Ministry issues “Implementation Plan for Stage 3 Monitoring under the New Air Quality Standards,” which orders 129 new cities to begin monitoring and publicly releasing PM 2.5 air-pollution data by November.⁴⁹

What does this mean for the United States?

The political balancing act that Chinese leaders are trying to pull off is one that no one in Washington should envy. U.S. officials should want Chinese leaders to construct policy incentives that are sustainable and effective within the Chinese political system, and the slice-and-dice approach certainly has a clear logic behind it. However, there are a few risks to that approach that the United States should monitor very closely.

First, there is a risk that structural reforms will stall and energy price increases will be limited to three-tier schemes, which keep subsidies in place for most of the nation and therefore do not do enough to dramatically alter consumption incentives over the mid- to longer-term. President Xi’s anticorruption campaign is intriguing in that it signals a clear

desire to break away from the political status quo. Since the status quo is a failure to make needed policy reforms—including deeper energy price reform and a further break-up of the utility sector—that indicates that major change is on the horizon. The problem is, however, that no one can say for sure what President Xi will actually manage to pull off on energy reform once he takes down all of these political opponents. There is also a risk that the anticorruption campaign will actually make it even harder to follow through with a stable reform program. Building a sustainable modern energy system requires more than strong-arm tactics. Chinese leaders need officials throughout the nation to work with them and be willing to commit to new reform initiatives even if those initiatives will damage powerful local enterprise interests in the short term. History tells us that there are drawbacks to scare tactics in Leninist-type systems. When lower officials fear their superiors, they manipulate data to hide any difficulties in carrying out top-down mandates. When a fear culture takes root, policy reform can run off the rails at the lower levels without top leaders being aware. President Xi has already demonstrated that he is willing to play hardball with political opponents. If he is to succeed on energy reform, he will also have to demonstrate that he is equally adept at building consensus.

Second, there is a risk that the multi-track air-pollution reforms that tighten standards along the eastern seaboard will simply drive coal plants, smelters, and industrial kilns to relocate to the inland and western areas of the nation where those new standards do not yet apply. Ideally the fast-track air quality reforms that are currently rolling out in the Beijing/Tianjin/Hebei area, the Pearl River Delta, and the Yangtze River Delta will successfully reduce particulate air pollution and will serve as a model that the rest of the country can follow. However, for those programs to have a real impact on China's overall greenhouse gas emissions, the rest of the country will need to follow rather quickly. At a minimum, Chinese leaders will need to take action soon to make sure there is no westward migration of emission-intensive industries in the interim.

Third, if energy reforms are sluggish and the air-pollution reforms push emission westward, China is likely to falter or at least struggle to achieve important macro-level targets—such as the five-year plan energy and emission intensity targets—and that will reduce ambition to set more aggressive targets for the 13th five-year plan and the post-2020 global climate targets to be negotiated under the U.N. Framework Convention on Climate Change. China's National Development and Reform Commission currently has a team of experts working to determine at what point China's greenhouse gas emissions are likely to peak under a business as usual scenario and what the nation's emission decline trajectory would look like under different economic conditions and different levels of policy ambition. That process is still underway, but at this point, China appears to be leaning toward a multi-track approach to emission peaking, similar to their slice-and-dice approaches to energy price reform and air-pollution reform.

National Development and Reform Commission Vice Chairman Xie Zhenhua has stated that Chinese emissions are likely to peak in three stages: the major metropolitan areas along the eastern seaboard will peak first around 2017, followed by China's middle-income areas around 2020 to 2025, and the rest of the nation around 2030.⁵⁰ The United States should prepare for Chinese officials to try to utilize faster progress in some metro areas to deflect criticism away from slower progress in other areas of the country. U.S. observers will have to closely track China's overall emission improvements—or lack thereof—nationwide and make their own conclusions about whether Beijing is living up to its international climate responsibilities.

China's future emission trajectory will be primarily determined by domestic factors, but international influence can shape how ambitious Chinese leaders are willing and able to be within the bounds of their domestic political constraints. In bilateral engagement with China and in all engagements on the global effort to combat climate change, the ability of the United States to play a leadership role and push other nations to take more ambitious policy action always comes down to our ability to demonstrate that we are living up to our own responsibilities at home. The United States still has a long way to go on that front, but we are at a much better place now than where we were a decade ago. That bodes well for our future interactions between our political leaders and their counterparts in China.

Melanie Hart is Director for China Energy and Climate Policy at the Center for American Progress.

Endnotes

Note: All translations are the author's own.

- 1 *China Daily*, "China's power capacity up 94m kw in 2013," February 11, 2014, http://www.chinadaily.com.cn/business/2014-02/11/content_17276118.htm.
- 2 Ibid.
- 3 The Pew Charitable Trusts, "Who's Winning the Clean Energy Race? 2013" (2014), available at <http://www.pewtrusts.org/en/research-and-analysis/reports/2014/04/03/whos-winning-the-clean-energy-race-2013>.
- 4 *China Daily*, "China needs nuclear power: former energy chief," March 25, 2014, available at http://usa.chinadaily.com.cn/business/2014-03/25/content_17376509.htm.
- 5 For comparative statistics on national electricity capacity, see U.S. Energy Information Administration, "Country Analysis Briefs," available at <http://www.eia.gov/countries/hallcountries> (last accessed July 2014); and U.S. Energy Information Administration, "International Energy Statistics," available at <http://www.eia.gov/countries/data.cfm> (last accessed July 2014).
- 6 Xinhua, "China targets greater non-fossil fuel use," *China Daily*, February 12, 2014, available at http://usa.chinadaily.com.cn/business/2014-02/12/content_17278211.htm.
- 7 *China Daily*, "China needs nuclear power: former energy chief," March 25, 2014, available at http://usa.chinadaily.com.cn/business/2014-03/25/content_17376509.htm.
- 8 Lan Lan, "China to reduce carbon intensity 17% by 2015," *China Daily*, July 29, 2011, available at http://www.chinadaily.com.cn/china/2011-07/29/content_13006047.htm.
- 9 Xinhua, "China struggling to meet emission targets: minister," April 21, 2014, available at http://news.xinhuanet.com/english/china/2014-04/21/c_126416067.htm.
- 10 *China Daily*, "Burning issue in GDP targets," October 29, 2013, available at http://www.china.org.cn/business/2013-10/29/content_30434696.htm.
- 11 *Xinhua*, "China will not swerve from emission cut target: official," November 26, 2009, available at http://news.xinhuanet.com/english/2009-11/26/content_12546388.htm.
- 12 ZHU Jianhong, "Ju min jie ti dian jia 7 yue 1 ri qi quan guo shi xing" (Tiered Residential Electricity Pricing to be Tried Nationwide Starting July 1), *People's Daily*, June 15, 2012, available at <http://politics.people.com.cn/GB/18189276.html>.
- 13 *China Daily*, "China implements new electricity pricing system," July 2, 2012, available at http://www.chinadaily.com.cn/bizchina/2012-07/02/content_15542580.htm.
- 14 Richard Fu, "Higher power tariffs to push upgrading," *Shanghai Daily*, December 24, 2013, available at <http://www.shanghaidaily.com/Business/energy/Higher-power-tariffs-to-push-upgrading/shdaily.shtml>.
- 15 Li Yang, "Tackling Overcapacity is Top Priority: Planner," *China Daily*, November 22, 2013, available at http://www.chinadaily.com.cn/kindle/2013-11/22/content_17123273.htm.
- 16 State Grid Corporation of China, "Corporate Profile," available at <http://www.sgcc.com.cn/ywlm/aboutus/profile.shtml> (last accessed June 2014).
- 17 Pu Jun and Yu Ning, "Will Power Sector Reform Break Up State Grid?," *Caixin*, April 25, 2013, available at <http://english.caixin.com/2013-04-25/100520115.html>.
- 18 *Caixin*, "In Tuesday's Papers: Former Top Economic Planner Liu Tienan Charged with Graft, Regulator Issues Clampdown on Internet Access for Set-Top Boxes," June 24, 2014, available at <http://english.caixin.com/2014-06-24/100694732.html>.
- 19 Wang Xiaobing and Gao Yu, "Fifth Energy Administration Official Detained in Just over Two Months," *Caixin*, June 24, 2014, available at http://english.caixin.com/2014-06-24/100694678.html?utm_source=The+Sinocism+China+Newsletter&utm_campaign=f46ba832cc-Sinocism06_25_14&utm_medium=email&utm_term=0_171f237867-f46ba832cc-29584869&mc_cid=f46ba832cc&mc_eid=dc1769562b.
- 20 National Development and Reform Commission, "Guo jia fa zhan gai ge wei guan yu tiao zheng tian ran qi jia ge de tong zhi" (National Development and Reform Commission Notice Regarding Adjustment of Natural Gas Prices), June 28, 2013, available at http://www.gov.cn/gzdt/2013-06/28/content_2436328.htm.
- 21 Back-of-the-envelope calculation comparing China's average natural gas import costs in 2012 and 2013 with state-set average wholesale natural gas price for industrial and commercial users. As of July 2013, the average wholesale price for nonresidential natural gas is 1.95 RMB per cubic meter. The average import price was 2.46 RMB per cubic meter in 2012 and 2.31 RMB per cubic meter in first-half 2013. Du Juan, "Tour aims to boost energy cooperation," *China Daily*, September 3, 2013, available at http://www.chinadaily.com.cn/china/2013xivisitcenterasia/2013-09/03/content_16939608.htm. Wei Tian and Du Juan, "Industry to pay 15% more for natural gas," *China Daily*, June 29, 2013, available at http://usa.chinadaily.com.cn/business/2013-06/29/content_16685555.htm.
- 22 Platts, "PetroChina's 2013 losses on imported natural gas hit roughly \$8 billion," March 20, 2014, available at <http://www.platts.com/latest-news/natural-gas/hongkong/petrochinas-2013-losses-on-imported-natural-gas-21363390>.
- 23 *Xinhua*, "China to launch multi-tier household gas pricing," *China Daily*, March 21, 2014, available at http://www.chinadaily.com.cn/china/2014-03/21/content_17368578.htm.
- 24 Gong Jing and Cui Zheng, "China Goes to War on PM 2.5," *Caixin*, February 27, 2012, available at <http://english.caixin.com/2012-02-27/100361100.html>.
- 25 *Xinhua*, "Beijing reaches annual 'blue sky days' target," *China Daily*, December 18, 2011, available at http://www.china.org.cn/environment/2011-12/18/content_24184374.htm.
- 26 Embassy of the United States, Beijing, China, "U.S. Embassy Beijing Air Quality Monitor," available at <http://beijing.usembassy-china.org.cn/070109air.html> (last accessed June 2014).
- 27 Stephen Q. Andrews, "Beijing's hazardous blue sky," May 12, 2011, *China Dialogue*, available at <https://www.chinadialogue.net/article/show/single/en/4661-Beijing-s-hazardous-blue-sky>.
- 28 Louisa Lim, "Clean Air A 'Luxury' in Beijing's Pollution Zone," National Public Radio, December 7, 2011, available at <http://www.npr.org/2011/12/07/143214875/clean-air-a-luxury-in-beijings-pollution-zone>.
- 29 *Xinhua*, "Beijing Opens Air Quality Monitoring Center to Public," *China Daily*, November 8, 2011, available at http://www.chinadaily.com.cn/xinhua/2011-11-08/content_4308075.html.
- 30 Jeremy Page, "Microbloggers Pressure Beijing to Improve Air Pollution Monitoring," *Wall Street Journal China Real Time Report*, November 8, 2011, available at <http://blogs.wsj.com/chinarealtime/2011/11/08/internet-puts-pressure-on-beijing-to-improve-air-pollution-monitoring/>.
- 31 See, for example, *China Daily*, "Harmful Omission," November 9, 2011, available at http://www.chinadaily.com.cn/opinion/2011-11/09/content_14061391.htm.

- 32 *China News Service*, “Huan jing kong qi zhi liang xin biao zhun fa bu 2016 nian 1 ri qi zai quan guo shi shi” (New Environmental Air Quality Standards Issued, to be Implemented Nationwide by January 2016), March 2, 2012, available in Chinese at http://www.china.com.cn/policy/txt/2012-03/02/content_24780979.htm.
- 33 State Council, “Zhong dian qu yu da qi wu ran fang zhi shi er wu gui hua” (12th Five Year Plan for Air Pollution Prevention and Control in Key Regions), October 2012, available in Chinese at http://www.gov.cn/gongbao/content/2013/content_2344559.htm.
- 34 State Council General Office, “Guo wu yuan guan yu yin fa da qi wu ran fang zhi xing dong ji hua de tong zhi” (State Council Notice on Promulgation of Action Plan for Air Pollution Prevention and Control), September 10, 2013, available in Chinese at http://www.gov.cn/zwggk/2013-09/12/content_2486773.htm.
- 35 Ministry of Environmental Protection, “Guan yu shi shi huan jing kong qi zhi liang biao zhun de tong zhi” (Notice Regarding the Implementation of the Ambient Air Quality Standards), February 29, 2012, available in Chinese at http://www.gov.cn/zwggk/2012-03/02/content_2081004.htm.
- 36 Zheng Xin, “Beijing expects healthy air by 2030,” *China Daily*, July 2, 2014, available at http://www.chinadaily.com.cn/china/2014-07/02/content_17635872.htm.
- 37 Ministry of Environmental Protection and the State Administration of Quality Supervision and Quarantine, “Huan jing kong qi zhi liang biao zhun” (Ambient Air Quality Standards), February 29, 2012, available in Chinese at <http://kjs.mep.gov.cn/hjbhzb/bzwb/dqjhjhb/dqhzlzb/201203/W020120410330232398521.pdf> and http://kjs.mep.gov.cn/hjbhzb/bzwb/dqjhjhb/dqhzlzb/201203/t20120302_224165.htm.
- 38 Ministry of Environmental Protection, “Guan yu shi shi huan jing kong qi zhi liang biao zhun de tong zhi” (Notice Regarding the Implementation of the Ambient Air Quality Standards), February 29, 2012, available in Chinese at http://www.gov.cn/zwggk/2012-03/02/content_2081004.htm.
- 39 “Guan yu yin fa kong qi zhi liang xin biao zhun di yi jie duan jian ce shi shi fang an de tong zhi” (Notice Regarding the Release of the Stage 1 Monitoring Plan for the New Air Quality Standards), Ministry of Environmental Protection, May 21, 2012, available in Chinese at http://www.gov.cn/zwggk/2012-05/24/content_2144221.htm and <http://www.mep.gov.cn/gkml/hbb/bgt/201205/W020120524383009550407.pdf>.
- 40 State Council, “Zhong dian qu yu da qi wu ran fang zhi shi er wu gui hua” (12th Five Year Plan for Air Pollution Prevention and Control in Key Regions), October 2012, available in Chinese at http://www.gov.cn/gongbao/content/2013/content_2344559.htm.
- 41 State Council General Office, “Wen Jiabao zhu chi zhao kai guo wu yuan chang wu hui yi... jue ding jia kuai you pin zhi liang sheng ji” (Wen Jiabao Presides Over State Council Business Meeting ... Decides to Accelerate Fuel Quality Improvements), February 6, 2013, available in Chinese at http://www.gov.cn/ldhd/2013-02/06/content_2328473.htm.
- 42 State Council General Office, “Wen Jiabao zhu chi zhao kai guo wu yuan chang wu hui yi... jue ding jia kuai you pin zhi liang sheng ji” (Wen Jiabao Presides Over State Council Business Meeting ... Decides to Accelerate Fuel Quality Improvements), February 6, 2013, available in Chinese at http://www.gov.cn/ldhd/2013-02/06/content_2328473.htm.
- 43 Xu Feng, “Che yong chai you guo IV biao zhun fa bu” (China IV Auto Diesel Standard Issued), *Zhong Guo Zhi Liang Bao* (China Quality Daily), February 18, 2013, available in Chinese at <http://finance.china.com.cn/consume/20130218/1285690.shtml>.
- 44 Ministry of Environmental Protection, “Guan yu yin fa kong qi zhi liang xin biao zhun di er jie duan jian ce shi shi fang an de tong zhi” (Notice Regarding the Release of the Stage 2 Monitoring Plan for the New Air Quality Standards), March 22, 2013, available in Chinese at http://www.mep.gov.cn/gkml/hbb/bgt/201303/t20130328_250063.htm.
- 45 *Xinmin Wanbao* “2018 nian qi che yong chai you guo wu biao zhun jiang qiang zhi shi shi” (China V Diesel Standard to be Enforced Starting 2018), August 23, 2013, available in Chinese at <http://www.chinanews.com/gn/2013/08-23/5200503.shtml>.
- 46 State Council General Office, “Guo wu yuan guan yu yin fa da qi wu ran fang zhi xing dong ji hua de tong zhi” (State Council Notice on Promulgation of Action Plan for Air Pollution Prevention and Control), September 10, 2013, available in Chinese at http://www.gov.cn/zwggk/2013-09/12/content_2486773.htm.
- 47 Liu Zhiqiang, “Guo wu qi you biao zhun fa bu” (China V Gasoline Standard Released), *People’s Daily*, December 19, 2013, http://www.nea.gov.cn/2013-12/19/c_132980563.htm.
- 48 Luo Qianwen, “Beijing shi da qi wu ran fang zhi tiao li 3 yue 1 ri qi shi xing” (Beijing’s Municipal Air Pollution Prevention Regulations to Take Effect March 1st), *Beijing Ribao* (Beijing Daily), February 12, 2014, available in Chinese at http://news.xinhuanet.com/2014-02/12/c_119291451.htm.
- 49 Ministry of Environmental Protection, “Guan yu yin fa kong qi zhi liang xin biao zhun di san jie duan jian ce shi shi fang an de tong zhi” (Notice Regarding the Release of the Stage 3 Monitoring Plan for the New Air Quality Standards), May 7, 2014, available in Chinese at http://www.zhb.gov.cn/gkml/hbb/bwj/201405/t20140509_273595.htm.
- 50 Stated by Xie Zhenhua in Chinese-language video interview for China Central Television, “Bu zhang hua kai nian: guo jia fa gai wei fu zhu ren Xie Zhen Hua” (New Year Conversations with Government Leaders: NDRC Vice Chairman Xie Zhenhua), China Central Television International Channel 4, January 4, 2014, available in Chinese at <http://v.ifeng.com/news/society/2014001/016bbb30-f56c-4b9b-8231-b23642a37e78.shtml>.