中国高中生美式辩论联赛
National High School Debate League of China

National High School Debate League of China
Spring 2016 Research Packet

Resolved:

The Chinese central government should adopt a carbon tax

A note from the NHSDLC:
You are not limited to the contents of this packet. Other sources of information, and other arguments, are available and useful. Do not limit your thinking to the arguments found here, and try not to limit your research to these sources. Independent research leads to arguments that take your opponents by surprise, and is more educational for you. We welcome any comments, questions, or suggestions on this packet (or anything else we do) sent to info@nhsdlc.cn. Happy debating!

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What's a carbon tax?

Source: The carbon tax foundation
http://www.carbontax.org/whats-a-carbon-tax/

A carbon tax is a fee assessed on the carbon content of fuels. Because of the strict proportionality between fuels' carbon content and their carbon dioxide emissions when burned, a carbon tax is effectively *a tax on the carbon dioxide emissions from burning fossil fuels.* Thus, carbon tax is shorthand for carbon dioxide tax or CO2tax — or, one could say, for a carbon pollution tax.

The essence of every fossil fuel — coal, oil and gas — is its carbon and hydrogen atoms. The bond between carbon and hydrogen atoms is the primary source of the heat released in fuel combustion. In efficient combustion, all carbon atoms are converted to CO2. Carbon dioxide, an otherwise non-lethal and innocuous gas, rises in the atmosphere and remains resident there, trapping heat re-radiated from Earth's surface and causing global warming and other harmful climate change. In contrast, non-combustion energy sources — wind, sunlight, falling water, atomic fission — do not convert carbon to carbon dioxide. Accordingly, a carbon tax (or CO2 tax) is effectively a tax on the use of fossil fuels, and only fossil fuels.

The carbon content of every form of fossil fuel, from anthracite to lignite coal, from residual oil to natural gas, is precisely known. Accordingly, so is the weight of CO2released into the atmosphere when the fuel is burned. That weight is 44/12, or 3.67, times as great as the weight of the carbon itself, owing to the fact that the molecular weight of carbon is 12 (atomic mass of carbon) whereas the molecular weight of carbon dioxide (CO2) is (2 × 16) (atomic mass of oxygen) + 12 (atomic mass of carbon), or 44.

A carbon tax thus presents few if any problems of documentation or measurement. As discussed here, administering a carbon tax should be simple; utilizing existing tax collection mechanisms, the tax would be paid far "upstream," i.e., at the point where fuels are extracted from the Earth and put into the stream of commerce, or imported into the U.S. Fuel suppliers and processors would pass along the cost of the tax to the extent that market conditions allow.

Per unit of energy (or Btu), natural gas emits the least CO2 of any fossil fuel when burned, and coal the most, with petroleum (oil) products such as gasoline occupying the middle range. Generally, a Btu from coal produces 30% more carbon dioxide than a Btu from oil, and 80% more than from natural gas (methane). A carbon tax would obey these proportions, taxing coal somewhat more heavily than petroleum products, and much more than natural gas.

To the extent that carbon is included in a manufactured product such as plastic, but is not burned, that carbon will not be taxed. Similarly, to the extent the carbon used to produce energy is permanently sequestered rather than released into the atmosphere, that carbon will not be taxed or a tax credit will be provided.

Why a carbon tax?

http://www.carbontax.org/why-a-carbon-tax/
Source: The Carbon Tax Foundation

The rationale for a carbon tax is simple: the levels of CO2 already in the Earth's atmosphere and being added daily are destabilizing established climate patterns and threatening the ecosystems on which we and other living beings depend. Very large and rapid reductions in the United States' and other nations' carbon emissions are essential to avoid runaway climate destabilization and avert resulting severe weather events, inundation of coastal areas, spread of diseases, failure of agriculture and water supply, infrastructure destruction, forced migrations, political upheavals and international conflict.

A tax on carbon pollution will create the broad incentives to encourage decision-makers at all levels of society to reduce carbon emissions through conservation, substitution and innovation. Currently, the prices of gasoline, electricity and fuels in general include none of the long-term costs associated with devastating climate change or even the well-quantified near-term health costs of burning fossil fuels. This immense "market failure" suppresses incentives to develop and deploy carbon-reducing measures such as energy efficiency (e.g., high-mileage cars and high-efficiency air conditioners), renewable energy (e.g., wind turbines, solar panels), low-carbon fuels (e.g., biofuels from high-cellulose plants), and conservation-based behavior such as bicycling, recycling and overall mindfulness toward energy consumption. Conversely, taxing fuels according to their carbon content will infuse these incentives at every link in the chain of decision and action — from individuals' choices and uses of vehicles, appliances, and housing, to businesses' choices of new product design, capital investment and facilities location, and governments' choices in regulatory policy, land use and taxation.

A carbon tax won't stop global climate disruption by itself — other, synergistic actions are required as well. But without a carbon tax, even the most aggressive regulatory regime (e.g., high-mileage cars) and "enlightened" subsidies (e.g., tax credits for efficiency and renewables) will fall woefully short of the necessary reductions in carbon burning and emissions.

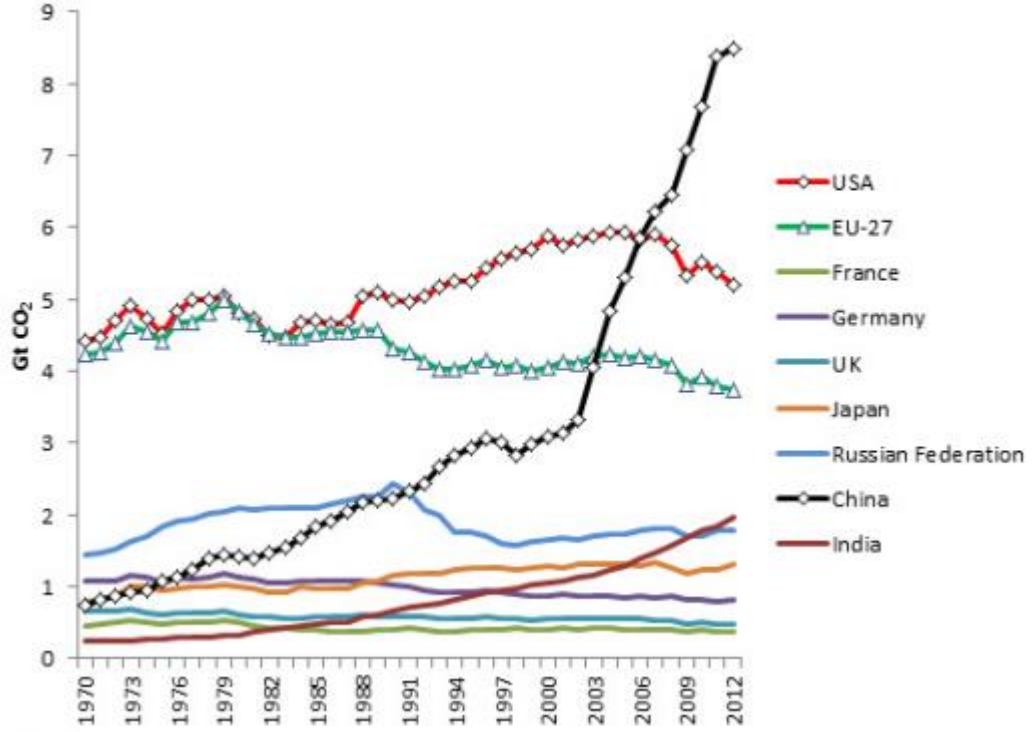
CO_2 Emissions by Country, Overall and Per Person

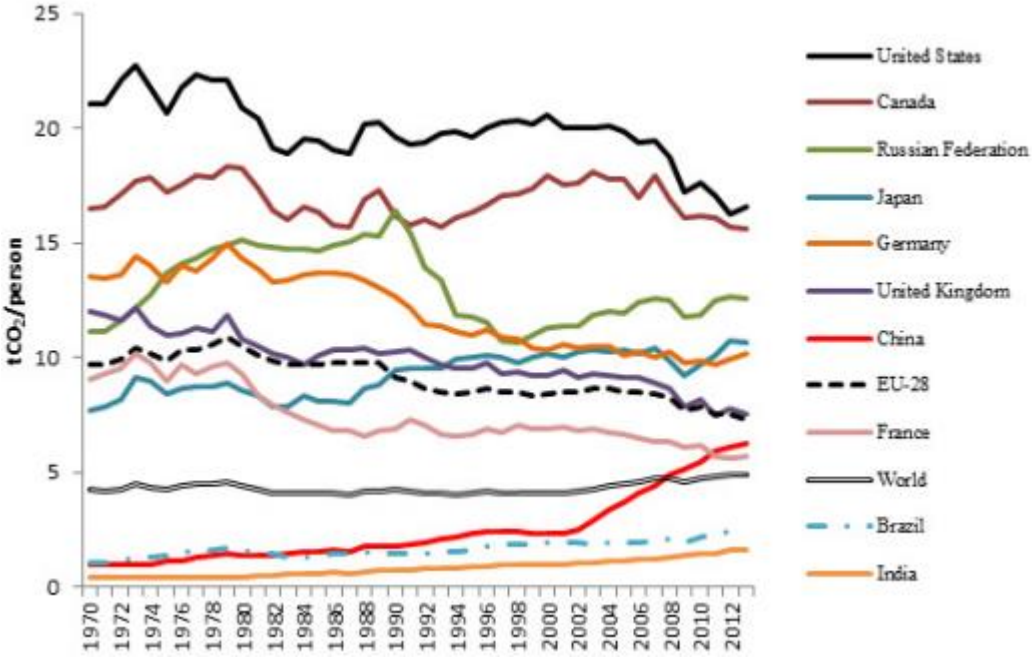
Date: May 2015

Source: Belfer Center for Science and International Affairs, Harvard University

http://belfercenter.ksg.harvard.edu/files/carbon-emissions-report-2015-final.pdf

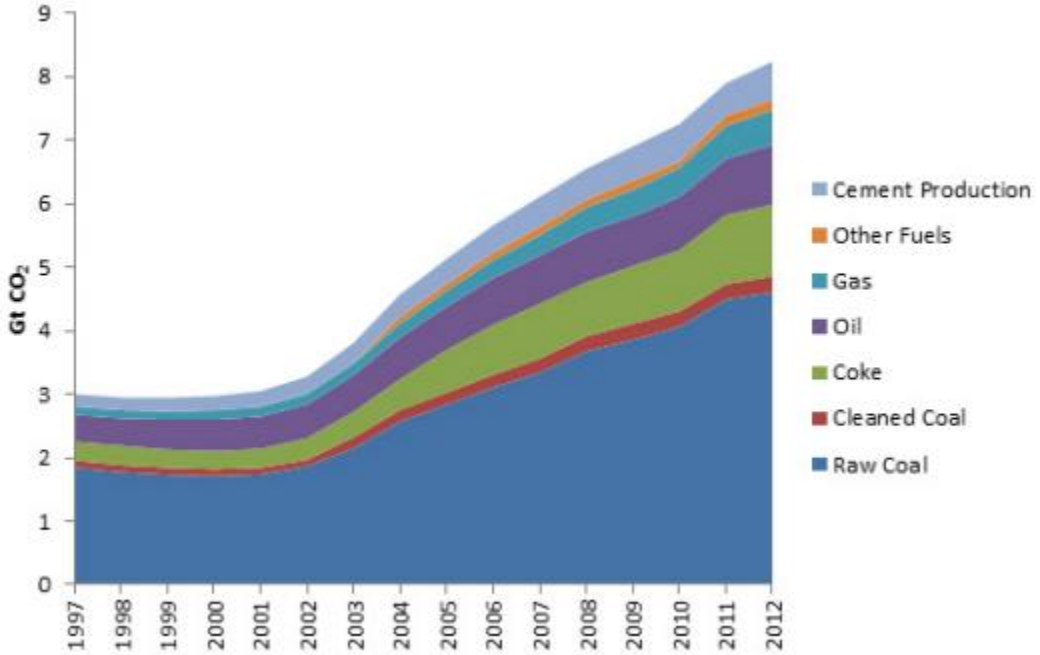
中文版：http://belfercenter.ksg.harvard.edu/files/carbon-emissions-report-2015-final-chinese.pdf





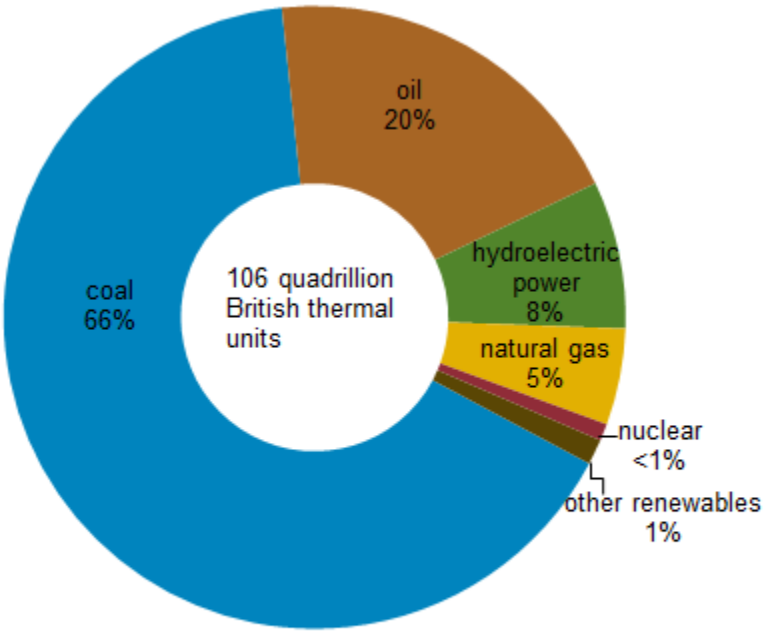
Historical Trends in China's CO2 Emissions by Source

Source: ibid



China's Energy Sources in 2012

Source: US Energy Information Administration
https://www.eia.gov/beta/international/analysis.cfm?iso=CHN



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Note: Total may not equal 100% due to independent rounding. Includes only commercial fuel sources and does not account for biomass used outside of power generation.
Source: U.S. Energy Information Administration.

China's Xi Jinping Announces Cap-and-Trade Carbon Program: Will it Work?

Date: September 30, 2015
Source: Forbes
http://www.forbes.com/sites/mclifford/2015/09/30/chinas-xi-jinping-announces-cap-and-trade-carbon-program-will-it-work/#2715e4857a0b7288d32a1b56

China's President Xi Jinping won kudos for announcing on his state visit to Washington, D.C. in late September that China will by 2017 enact a cap-and-trade system designed to cut carbon emissions.

According to the White House joint statement on the meeting between Xi and U.S. President Barack Obama, "China… plans to start in 2017 its national emission trading system, covering key industry sectors such as iron and steel, power generation, chemicals, building materials, paper-making, and nonferrous metals."

Cap-and-trade programs typically give a company the right to emit a certain amount of a given pollutant; if it can cut its emissions beyond what's expected, it can sell the excess allocation. Conversely, if it needs more credits, it can buy them from another company.

"It's a significant move," a senior administration official told the Washington Post.

The support for Xi Jinping's announcement that China would set up a nationwide-cap-and-trade carbon trading program by 2017 is understandable. China is responsible for about 30 percent of global greenhouse gas emissions. No global solution for our climate challenge is possible without China playing a central role.

"Xi Jinping is scoring a propaganda coup by announcing China's intention to introduce a national cap-and-trade scheme in 2017, while he is a guest of Obama at the White House," noted Macquarie University professor John Matthews in The Conversation. "It will not be lost on observers that China will be introducing the very kind of scheme that failed to get through the U.S. Congress."

The program builds on a seven-city pilot program that China has developed over the past few years. Many observers note that this follows the typical Chinese path of reform, "crossing the river by feeling the stones," to use Deng Xiaoping's apt if oft-quoted phrase.

Propaganda coups are nice theater, but they don't clean the air. The euphoria over China's announcement should not obscure some tough questions.

The most important issue is China's administrative ability to manage such a large and complex system. Cap-and-trade systems have worked elsewhere, but the best tend to have a relatively small number of large emitters and a highly developed legal and regulatory system.

The flaws in cap-and-trade systems often start from the beginning. Initial allocations typically are too large, as regulators attempt to mollify industry interests, who are concerned about being forced to pay higher costs. Carbon trading in Europe to date has been a failure; overly large initial allocations coupled with weak economic growth have seen prices of the trading credits drop to almost nothing. Thus the trading scheme to date has been largely ineffective in cutting carbon emissions.

Most economists agree that a carbon tax is far simpler and more efficient. China could simply put a price on each ton of coal, as this MIT-Tsinghua study shows, and fairly quickly see emissions peak with virtually no cost to the economy. But that would take away bureaucratic discretion.

Let's give China credit for doing its bit to keep pushing the momentum forward in the run-up to the Paris COP-21 climate talks this December. Let's just not assume that the carbon trading policy necessarily will mean significant cuts in carbon emissions.

Enacting Cap-and-Trade Will Present Challenges Under China's System

Date: September 25, 2015
Source: New York Times
http://www.nytimes.com/2015/09/26/world/asia/china-emissions-xi-jinping-limit-cap-and-trade.html

BEIJING — American officials have applauded President Xi Jinping's commitment to a national market for greenhouse gas quotas as a breakthrough in environmental cooperation.

But to work well, Mr. Xi's pledge, made at the White House on Friday, will demand big changes from a Chinese government accustomed to heavy-handed intervention and skewed statistics. It will take years of effort to build a substantial market that plays a major role in curbing emissions, and even then, it could founder, like similar initiatives elsewhere, experts said.

China has had local trials underway since 2013. Their records have been mixed, supported by the liberal doling out of emissions permits or by cajoling companies to take part. Expanding those initial efforts nationwide by 2017, as Mr. Xi pledged to do, will be daunting even for China's authoritarian leaders.

"It will be a heavy burden having all this ready in time for 2017," said Yang Fuqiang, a senior adviser on energy and climate change policy in Beijing for the Natural Resources Defense Council. "Now we're not even sure just how much energy we consume, so how can you go ahead with trading?"

Mr. Yang and other policy experts said that Mr. Xi's target date would be just the start of a national trading plan, which would initially include big companies in several industries.

Mr. Xi's "cap and trade" system would cover power, iron and steel, chemicals, building materials, papermaking and nonferrous metals. But the big transport sector has been left out for now.

"We'll face the question of how to reduce emissions in industries and sectors not covered by emissions trading schemes," Mr. Yang said. "Then there'll be coordination issues between the different policies and sectors. It's complicated."

Mr. Xi arrived in Washington to doubts that his government was serious about market overhauls, reducing pollution or shouldering global burdens. He hoped to rebuff those criticisms by promising to recruit the forces of capitalism to tame the smokestack pollution driving global warming.

So-called cap-and-trade programs limit the amount of pollution that companies can emit and then let them pay competitive prices for a share of the quota. Companies that do not use their entire quota can sell the remainder, while those that need more than their quota have to buy additional permits.

The intended result is a competitive market that induces companies to devise ways to reduce emissions. The European Union's struggle to make its 10-year-old emission trading program a success underscores how difficult it is to strike such a balance.

To create a system that works for China, regulators must develop policies and trading platforms that give companies confidence that they are being treated equally and transparently as they buy and sell emission permits. If China's stock market is any guide, plenty of investors say their experience is often the opposite.

"There's been a debate in Western countries about whether or not China is a market system," said Qi Ye, the director of the Climate Policy Institute of Tsinghua University in Beijing. "Europe certainly is a market system, so if Europe cannot do an emissions trading system well, how would you expect China to have a successful carbon market?"

For now, United States officials and many environmental groups have welcomed the plan as a stimulus for negotiations on a new global climate change treaty in Paris in December. Chinese officials have said before that they want to establish a nationwide emissions market by 2017, but Mr. Xi's declaration will put presidential weight behind that goal, the officials said.

"China starting its national emissions trading scheme will have a major signaling effect globally," said Frank Jotzo, director of the Center for Climate Economics and Policy at the Australian National University in Canberra, who closely tracks developments in China.

"The world's second-largest economy puts in place a price on carbon emissions, and this will be noted the world over," Professor Jotzo said. "If successful, it can grow into playing a major role in facilitating China's objectives for a cleaner energy and industrial system."

Mr. Xi's declaration builds on one he made last November, when he and President Obama announced an agreement that China's carbon dioxide emissions would stop rising by around 2030. That was the first time the Chinese government had given a clear goal for a peak.

A growing number of scientists now say that China's slowing economy and weakening dependence on heavy industry for growth make a peak by 2025 feasible.

China's greenhouse gas emissions are about double those of the United States, the second-biggest polluter. That has magnified international pressure on Beijing to do more to avert climate change. But Mr. Xi appears unlikely to budge from his more conservative peak date.

Experts and policy advisers said the proposed national carbon trading plan would test a government that, during stock market turbulence in recent months, has shown that it can swiftly turn against private investors and subvert transparency.

"You can envision there's a lot of political and technical challenges ahead," said Ranping Song, the developing country climate action manager for the World Resources Institute in Washington.

He added: "There's no guarantee that this will go smoothly. But this coming from the head of state, Xi, gives more confidence that this is going to be fairly significant and is a lot less likely to be watered down."

Since 2013, China has experimented with pilot plans across seven economically varied areas, including Beijing and Guangdong Province, that allow designated companies to buy and sell the right to use power, burn fossil fuels and release carbon dioxide into the air.

The trial plans initially struggled with murky rules; reluctant companies picked by the government to take part; and regulators inexperienced in measuring how much pollution factories, boilers and buildings release. Similar problems have troubled carbon markets in advanced economies like Europe, and several experts said China's markets were improving.

"It can work perfectly if we have all the pieces of the puzzle ready, but if we don't have the rest of them, this one alone will not generate much benefit," said Wang Tao, an analyst at the Carnegie-Tsinghua Center for Global Policy in Beijing. "There are also risks if we don't manage this well. The collapse of the carbon price may actually shut down the market."

That process will start when big companies in several industrial sectors, including steel, chemicals and construction materials, set quotas and prices so they can start trading the right to consume power and fossil fuels, Mr. Wang and other researchers familiar with China's plans said.

Official indications of the scope of the proposed national program suggest that it could initially cover about 10,000 companies and other emitters in a market for up to four billion metric tons of carbon dioxide, saidZhongXiang Zhang, an economics professor at Tianjin University in northern China and author of a recent assessment of China's emissions trading plans. That would be about twice as large as Europe's emission trading program, now the world's largest.

Chinese officials have been studying that market and others. But the lessons have not always been promising. Europe's emissions trading system has stumbled amid criticism that it gave out emissions permits too generously and failed to make companies change their energy habits.

"Carbon emissions trading requires a trading exchange, third party inspection, and then there's a whole lot of monitoring and verification," said Mr. Yang from the Natural Resources Defense Council. "The transaction costs are very high."

The challenges in China are compounded by unreliable statistics, corruption and local officials who have made blazing economic growth a point of honor. Overcoming those problems will demand far-reaching changes to the energy sector, so that trading emissions translates into reduced consumption of coal and other polluting fuels, several experts said.

Under China's plans, the government would not place an overall cap on carbon dioxide emissions, an idea the government has rejected as premature.

Instead, the system favored by Chinese policy makers would limit emissions for designated companies in certain industries. The companies would obtain quotas for their emissions through allocations, auctions or initial purchases.

"A national scheme can become effective over time," said Professor Jotzo, from the Australian National University. "It will not be the biggest factor in China's climate change policy toolbox at the start, and perhaps not for some time."

For China, benefits of carbon tax far outweigh the costs

Date: November 12, 2013
Source: South China Morning Post
http://www.scmp.com/comment/insight-opinion/article/1353521/china-benefits-carbon-tax-far-outweigh-costs

That China needs to give its growth engine a tune-up is hardly in doubt. With the economy slowing for the past several years, all eyes are on the third plenum of the Communist Party. Hopes are that the leadership will unveil structural reforms aimed at putting the economy on a sustainable trajectory. Interest rate liberalisation, privatisation and deregulation are high on the wish list of investors and reformers alike.

But there is an equally important, if less talked about, potential initiative: a carbon tax. With China recently topping the US as the world's biggest contributor to greenhouse gases, and its cities periodically gripped by crippling smog, a levy on carbon emissions would be among the most consequential reforms officials could adopt. The Ministry of Finance has already proposed its introduction. It now needs the explicit backing of the leadership to see the light of day.

China has made vast strides in environmental protection in recent years. But a lot more needs to be done to curb harmful emissions. Various schemes are being tried. A cap-and-trade system is already up and running in Shenzhen and is slated to start in six other pilot regions.

But arguably easier to implement in China, and thus among the most promising, is a fixed charge per tonne of carbon emitted by industrial polluters. This would rise over time, progressively strengthening incentives for the adoption of cleaner technology.

With production becoming less carbon-intensive, the environmental benefits are obvious. Cao Jing, an economist at Tsinghua University in Beijing, estimates that even a gradual introduction of a carbon tax would cut emissions by a whopping 19 per cent by 2020. This would go a long way towards meeting China's pledge of reducing the carbon emitted per unit of gross domestic product - though not the absolute level of emissions - by 40-45 per cent from 2005 levels by the end of the decade.

Less well understood, but of equal importance, are the economic benefits.

First, a carbon tax would encourage gains in overall efficiency by spurring the adoption of more advanced technology. With productivity growth slowing, raising the cost of energy would force broader rationalisation in many pockets of Chinese industry, including steel and cement where highly inefficient producers continue to operate.

Boosting productivity growth is key to sustaining China's growth. Naturally, as the economy matures, such gains will be harder to attain. Yet, in China, the need to raise efficiency is especially acute: financial risks have grown amid rising debt, and a vast demographic turn - thanks to the one-child policy - is forcing China to shift away from a labour-intensive growth model.

Second, government revenues would receive a welcome boost. Even a fairly modest carbon tax to begin with could bring in between 90 billion yuan (HK$114 billion) and 460 billion yuan annually, or up to 0.8 per cent of GDP. Over time, as more and more industries are brought into the scheme, and the levy is pushed up, revenues would climb considerably higher. This would be the case even if, as intended, energy-saving measures start to produce results.

Extra revenue could be used to ease the adjustment pains that structural reforms inevitably entail - and that dangerously harden opposition to the process. For example, tax breaks could be offered to firms to keep workers on the payroll, at least for a while, who might otherwise be fired. This could help avoid a politically challenging spike in joblessness and thus speed up the implementation of structural reforms.

Meanwhile, Beijing could share some of the extra income with local governments, reducing their reliance on land sales at inflated prices to plug budget gaps. The Ministry of Finance has already budgeted 5 billion yuan to reward local authorities if they meet pollution reduction targets. Such revenue sharing from a carbon tax would also reduce the need to add more debt to pay for infrastructure investment, something that has fuelled the precarious growth of the shadow banking system in recent years.

Third, a carbon tax would slow imports of fossil fuels. This represents a direct cost saving for the Chinese economy that would boost growth in the long run. Last December, China overtook the US as an importer of crude oil, and is already the world's largest buyer of coal. Slowing the pace of such overseas purchases would leave more money to be spent at home - a key strategy in China's structural economic reforms.

Extra taxes, of course, whether in China or elsewhere, are never popular. One ready objection is that they burden businesses and slow investment. But, in China's case, a carbon tax might end up raising, not slowing, growth. For one, the country already spends plenty on investment - by some measures close to half of its gross domestic product - but needs to work harder at allocating it wisely. A carbon tax, coupled with stricter environmental regulation and enforcement, would render inefficient projects harder to sustain.

In addition, for the economy as a whole, a carbon levy would help generate savings by limiting environmental damage. Take health care: its costs have soared in recent years, reflecting in part China's rapidly ageing society. But environmental degradation, including air pollution, is playing a critical role as well.

A recent statistical study estimates that life expectancy in northern China was cut short by five years thanks to a rise in pollution-related illnesses. Clearly, a carbon tax alone would not remedy this. But it would offer an important first step in curbing the hidden costs of pollution, and, in the process, help China's economy evolve along a more sustainable path.

Raise the green lanterns

Date: December 5, 2015
Source: The Economist
http://www.economist.com/news/china/21679500-china-using-climate-policy-push-through-domestic-reforms-raise-green-lanterns

WHEN world leaders gathered in Paris to discuss cutting planet-heating emissions, a pall of smog hung over Beijing. In parts of the capital levels of fine particulate matter reached 30 times the limit deemed safe. Though air pollution and climate change are different things, Chinese citydwellers think of them in the same, poisoned breath. The murky skies seemed irreconcilable with the bright intentions promised in France.

Yet a marked change has taken place in China's official thinking. Where once China viewed international climate talks as a conspiracy to constrain its economy, it now sees a global agreement as helpful to its own development.

China accounts for two-thirds of the world's increase in the carbon dioxide emitted since 2000. It has come a long way in recognising the problem. When China first joined international climate talks, the environment was just a minor branch of foreign policy. The ministry for environmental protection had no policymaking powers until 2008. Only in 2012 did public pressure force cities to publish air-pollution data.

Yet today China pledges to cap carbon emissions by 2030 (reversing its former position that, as a developing power, it should not be bound to an absolute reduction); and it says it will cut its carbon intensity (that is, emissions per unit of GDP) by a fifth, as well as increase by the same amount the electricity generated from sources other than fossil fuels. The latest five-year plan, a blueprint for the Communist Party's intentions that was unveiled last month, contains clear policy prescriptions for making economic development more environmentally friendly.

There's more

Right after the Paris summit, however it ends, China is expected to make more promises in a new document, co-written by international experts, that presents a far-reaching programme of how China should clean up its act. It is based on models that account for both economic and political viability. On top of existing plans, such as launching a national emissions-trading scheme in 2017, the government may even outline proposals for a carbon tax, something that has eluded many prosperous countries in the West.

The big question is why China is now so serious about climate change. The answer is not that Communist leaders are newly converted econuts. Rather, they want to use environmental concerns to rally domestic support for difficult reforms that would sustain growth in the coming decades. Since a global slowdown in 2008 it has become clear that to continue growing, China must move its economy away from construction and energy-intensive industry towards services. At the same time, China faces an energy crunch. For instance, in recent years China has been a net importer of coal, which generates two-thirds of China's electricity. It all argues for growth plans that involve less carbon.

This is where signing international accords, such as the one hoped for in Paris, come in, for they will help the government fight entrenched interests at home. Observers see a parallel with China's joining the World Trade Organisation in 2001. It allowed leaders to push through internal economic reform against fierce domestic opposition. In the same way, a global climate treaty should help it take tough measures for restructuring the economy.

It will not be easy. Provincial party bosses and state-owned enterprises hate to shut factories, particularly in those parts of the country, such as Shanxi and Inner Mongolia in the north, where coal is a big employer. Cutting demand for energy is even harder. Even if the amount of electricity used by state industry falls, that used by private firms and households is bound to increase. What is more, environmental regulations and laws laid down by the centre are routinely flouted.

But cleaning up China's act has, for the central government, become a political necessity too. Environmental issues have been major public concerns for over a decade, says Anthony Saich of Harvard University, which has conducted polls. True, rural people fret most (and with good reason) about water pollution. But those in the cities gripe about their toxic air. Both represent a reproach to the government over its neglect of people's lives and health.

That is why national economic goals, political goals, public opinion and international pressure all point towards trying to cut emissions, pollutants included. In particular, says Zhang Zhongxiang of Tianjin University, now that dealing with climate change is a pillar of China's diplomacy, the government must show it can keep its promises. It has some tools at its disposal. Across the country, the environmental record of government officials has become a crucial part of their evaluation by the Communist Party; and cadres will be held accountable for their actions even after leaving their position. Several provinces have already punished officials for environmental accidents and for not enforcing environmental laws.

Fifty shades of grey

But there are obstacles to real change. The electricity grid and national power market are ill-equipped to increase renewable generation by much. Corruption in industrial procurement remains widespread, which does nothing to promote long-term efficiency or reductions in emissions. Competing incentives are also in play: earlier this year, the authorities forced a big Chinese investment company to buy back shares it had sold in old-fashioned industrial fields, for fear that it might depress share prices (which crashed anyway in a more general stockmarket meltdown). The government will not trust market mechanisms alone, says Yang Fuqiang of the Natural Resources Defense Council, an activist group.

Nor are leaders yet pushing for change on all fronts. For instance, government efforts to cut emissions of carbon dioxide and nitrous oxide are greater than for many other greenhouse gases. Scarce and polluted water, one of China's most severe environmental challenges, is almost entirely beyond the scope of the current raft of reforms. And China refuses to publish its estimate of the environmental toll of economic growth.

Sceptics scoff that China's promises in Paris are irrelevant because emissions will probably peak regardless, long before the promised 2030. Nor has the government said how high that top might be. Yet the sceptics underestimate the importance of an international agreement for China and beyond. Like other

countries, China has to date followed a pattern of "grow first, clean up later". Yet very quickly it has recognised the dangers and drawbacks of such a policy and has been pouring money into clean energy and other innovations it hopes will provide green growth. In that, it may prove a model for other fast-developing countries. That might signal a small patch of blue sky.

How China, the “world’s largest polluter”, is taking on climate change

Date: December 20, 2015
Source: South China Morning Post
http://www.scmp.com/magazines/post-magazine/article/1891794/how-china-worlds-largest-polluter-taking-climate-change

I first arrived in Beijing in 1984. The winter was bitterly cold. We routinely wore three pairs of long johns under our jeans, tops and jumpers, then added a bulky overcoat to go outdoors. What meagre heating we had was on for only four months of the year, even though Beijing hovered below freezing for almost six. It was also dark. One of my students cheerfully informed me it was "Save electricity Tuesday", which was always followed by "Save electricity Friday". These were rolling blackouts, when electricity was switched off across the neighbourhood for the entire day - even in factories, which meant, twice a week, no one worked.

Despite the lack of warmth, light and transport, Beijing was horribly polluted, especially in winter. Buses belched black smoke. When I rode my bicycle through city streets I'd often find chunks of coal in my hair, coughed up by the boilers of the surrounding houses. It was a full year before I knew that the Western Hills should be visible from right outside the Beijing Normal University, where I was employed as a teacher.

Fast-forward to today, and Beijing is a changed city. People's lives have been radically transformed. The Western Hills are now visible at least some of the time. Beijingers live in modern apartments with all mod cons. This lifestyle has come at the cost of a huge rise in energy consumption, most of it generated by coal-fired power stations. Not only is China now the largest overall energy consumer in the world, it has surged ahead to become the biggest emitter of greenhouse gases. But, with the crucial UN climate talks having just concluded in Paris, it's worth exploring a different side of the story.

Peer behind the curtain and you get a more nuanced picture than the usual stats suggest. Quietly, over the past decade, China has turned its factories around, with a view to cleaning up the skies. The country is no eco-saint, but it has recognised the enormous benefits of using fuel more efficiently. After the massive growth of the past 15 years, its emissions are starting to slow. It's still early days, but China's coal use has already peaked, and a greenhouse gas peak may not be far behind.

No one - not even China - expected its emissions to shoot up quite as fast as they did. When, in 2007, the Netherlands Environmental Assessment Agency suggested that the country had become the world's top emitter, the news came as a surprise to all. It was several years earlier than anticipated - so much so that the figure was disputed.

The International Energy Agency confirmed the trend in 2008. In 2010, China became the world's largest energy consumer, about five years earlier than expected. And in 2014, the Global Carbon Project reported that the country's emissions per capita exceeded those of the European Union. The figure is an average.

Germany's per capita emissions, for instance, are still higher than China's; those of other EU nations, such as Britain and France, are now lower. This rapid rise in emissions - compounded by China's huge population, which amps up any stats about it - is why the country is often described rather simplistically as the world's largest polluter.

How to control emissions was at the heart of the UN climate talks. There are two main ways of doing this: you can cut the amount of fossil fuels you burn and you can stop deforestation. China is, in fact, a major reforester. Forest cover has grown from 8.6 per cent in 1949 to more than 20 per cent today. And while there are debates about how much carbon each new acre of trees captures, and concerns about the biodiversity and health of China's new forests, increased tree cover has undoubtedly soaked up a great deal of carbon that would otherwise be in the atmosphere.

Most of that carbon comes from coal - the dirtiest of fossil fuels - but the country has also made a huge effort to boost other sources of power. Figures from the Global Wind Energy Council show that China now has more installed wind power than any other country, and each year adds more than everyone else. It is also second in installed solar capacity.

The country gets nearly a quarter of its electricity from hydropower, and that share will continue to grow for another five to 10 years, until prime locations are all taken up. Hydropower is criticised for its environmental cost, but it is worth noting that the dam-building we are seeing in China today is following the same path as it did in Europe, the United States and Canada in the last century.

Solar, wind and hydro - plus a small but growing portion of nuclear power - are paving the way for a future that relies less on coal. In 2014 the black stuff accounted for 65 per cent of China's energy use, down from 70 per cent in 2011. While the trend is encouraging, the figures show that so far, alternative fuels have only had a small impact. The real way China is controlling its emissions is less photogenic than a solar array, but much more potent.

Like many developing nations, 20th-century China was far from energy-efficient. What little heating and electricity we had in our spartan 1980s apartments came from inefficient coal boilers. Those used in power stations were actually dangerous. They were known to blow up, killing workers, if the pressure was raised to boost efficiency. The government responded by buying and developing new, safer, more efficient technology - a good start, but the breakneck pace at which China began transforming itself in the 2000s meant that these initial efforts paled into insignificance compared with the sheer quantity of energy being used. In 2006, the government renewed its efforts by declaring "energy efficiency and pollution reduction" a national priority and bringing in programmes to target industry.

Researchers in the Lawrence Berkeley National Laboratory's China Energy Group have shown that real improvements came primarily from two major programmes launched in the 2006-2010 five-year plan that had almost equal importance. The Thousand Enterprise Programme took China's top 1,000 companies and forced them to completely rethink their energy use. Companies were told to appoint staff to monitor energy efficiency and upgrade, redesign and replace industrial kit and software - all with the aim of becoming more energy-savvy, cutting the amount of power they used without denting productivity.

The second programme was more drastic. Thousands of small and inefficient industrial units were simply told to close down. In most cases, companies shut old, dirty installations and shifted operations to newer ones. Remember that China's economy was booming at the time. For the most part, workers either shifted within the same company or looked for opportunities in the exploding economy.

Both programmes targeted steel, cement, power, paper and other energy-hungry industries. They were so successful that they were extended in the next five-year plan. The Thousand Enterprise Programme became the Ten Thousand Enterprise Programme. Smaller and more inefficient plants continued to shut up shop.

The efforts have borne fruit. In the first five years, China cut energy intensity - a measure of how much energy is used to generate $1 of gross domestic product - by 19.1 per cent, missing its ambitious 20 per cent goal by a hair's breadth. This was a victory in my eyes, both because the figure was much higher than outsiders predicted and because it showed China would be honest about its achievements even when it didn't quite meet its goals. The goal of the current five-year plan is to reduce intensity by another 16 per cent, and all indications are that this will be met. The government has also set a carbon intensity target to cut the amount of carbon emitted per unit of GDP by 17 per cent. This was a goal promised at the Copenhagen climate talks, in 2009.

It takes a long time for energy policies to produce major results, but China is now clearly committed to a lower carbon future. In the past 12 months, it has said that its emissions will peak by 2030 or earlier if possible. It is difficult to overstate the importance of this peak for the future of the planet, especially when we're talking about the world's biggest emitter. Even though developing nations still need room to expand - meaning their emissions will continue to rise in the short term - temperatures simply cannot be kept in check if global emissions keep on growing year after year.

While Beijing never explicitly says it is responding to the emissions data, it does describe itself as being under increasing pressure. The pressure is not just to cut emissions in response to the international community, but also to clean up its air and water to improve public and environmental health. China is still in many ways a developing country, but it has also clearly recognised its responsibility to be a world leader.

And here's the surprising aspect of the Chinese growth model. The country's emissions rose faster than anyone expected, but the reverse may also come to pass. Emissions are still growing, but they are rising a little less with each passing year, which suggests China is in fact rapidly approaching its peak. Coal consumption actually dropped for the first time ever in 2014, according to China's National Coal Association. Some say the drop is due to an economic downturn, but a number of economists argue that the slowdown in China's traditional industrial sector has been matched by a rise in the services industry - a shift towards low-carbon sectors that would be good news both for the economy and, crucially, for global emissions.

Certainly on the ground things appear quite prosperous. Where, in the 1980s, you had virtually no transport between even the major city hubs, today you have access to fantastic subway systems, high-speed rail that connects virtually the entire country, city and inter-city bus systems, a comprehensive air

network, more than 200 million electric bicycles and more than 150 million private cars. High-speed rail is gradually replacing air travel on shorter routes - a huge carbon saving.

The general consensus among climate change analysts is that China is now approaching its emissions peak surprisingly fast because it is moving away from an economy that is primarily driven by industry. Jiang Kejun, one of China's foremost energy modellers at the government-run Energy Research Institute, says the country can peak as early as 2022. There is a healthy debate on the subject, but the consensus is that a pre-2030 emissions peak is quite possible.

Recently, in a remarkable joint presidential statement with the US, China also committed to setting emissions targets for various sectors, and to getting a cap and trade market - where polluters may trade the right to emit - off the ground by 2017.

The design process is mainly about how to allocate carbon credits to industry. Zhang Xiliang, of Tsinghua University, in Beijing, who is part of the design team, says credits are being given only to factories that operate above a benchmark level of efficiency. Others will need to purchase them, which should help close down even more top polluters, for whom the cost will be too much to bear.

Whether carbon markets will be the best solution for China is an open question. Both Jiang and Yang Fuqiang, of the Natural Resources Defence Council, a US NGO, believe it will ultimately implement a carbon tax. Beijing is good at collecting taxes, and does not have to deal with the same political opposition to taxation as the US and Europe. Which solution it opts for is a technicality. The bottom line is that it has a number of tools to control emissions and an economy that is changing in ways that help with more cuts.

As China has become wealthier, and daily life more like that in the West, especially for the half of the population who live in cities, the country has also forged more connections with the rest of the world. Thirty years ago, Chinese policy was highly insular. Today its scholars are major players in drafting the assessments that inform climate talks such as those in Paris, and its negotiators are playing an increasingly active role, too.

Pollution and especially protecting the environment are still enormous challenges for China, but on climate change the nation appears to have turned a corner.

China underreporting coal consumption by up to 17%, data suggests

Date: November 4, 2015
Source: The Guardian
http://www.theguardian.com/world/2015/nov/04/china-underreporting-coal-consumption-by-up-to-17-data-suggests

China, the world's largest carbon emitter, has been dramatically underreporting the amount of coal it consumes each year, it has been claimed ahead of key climate talks in Paris.
Official Chinese data, reported by the New York Times on Wednesday after being quietly released earlier this year, suggests China has been burning up to 17% more coal each year than previously disclosed by the government.

The revelation – which may mean China has emitted close to a billion additional tonnes of carbon dioxide into the atmosphere each year – could complicate the fight against global warming ahead of the United Nations climate change conference in Paris, which begins on 30 November.

In 2012 China consumed 600m more tonnes of coal – or more than 70% of the United States' annual total – than previously disclosed, according to the revised data.

China's national bureau of statistics did not immediately confirm the report. However, speaking at a coal conference in Beijing, an adviser to the natural resources defence council said: "The new figures are more accurate than before."

Zhou Fengqi, the adviser, told AFP the updated figures "more accurately reflect the situation".
Yang Fuqiang, a former Chinese energy official who advises the Natural Resources Defense Council in the US, told the New York Times: "This will have a big impact, because China has been burning so much more coal than we believed."

"It turns out that it was an even bigger emitter than we imagined. This helps to explain why China's air quality is so poor, and that will make it easier to get national leaders to take this seriously."

The report came as Chinese prime minister, Li Keqiang, said his country had a duty to humanity to bring its emissions under control.

Speaking during a visit to China by the French president, François Hollande, Li said: "For a great many years, we consumed too much energy and resources to achieve our development, and this model has since become unsustainable."

Li Shuo, the senior climate and energy policy officer for Greenpeace East Asia, said the revised data suggested a gap between official statistics and what was happening on the ground.

“It is quite a lot more than previously reported – it is basically equivalent to the whole national consumption of Germany, and Germany is a large coal-consumption country in Europe.” However, Li, who said environment experts and policymakers had been aware of the higher numbers since the start of this year, cautioned against an overly bleak reading of the figures.
China is the world’s largest consumer of coal, with Chinese miners digging up 3.87bn tonnes last year alone.

But Li said an economic slowdown and Beijing’s bold attempts to reduce its dependency on the fossil fuel meant consumption was now falling.

“China’s coal consumption probably won’t get as high as what we saw for the past decade,” he said. “At [the very] least we are seeing a plateauing period now, which is quite significant.”
Beijing was accused of wrecking climate talks in Copenhagen in 2009 by opposing legally binding emissions cuts.

But Li predicted China – which has pledged to hit “peak emissions” and make 20% of its energy mix renewable by 2030 – would play a more constructive role in Paris.

“China is making a lot of effort and is actually getting quite proactive these days compared to six years ago in Copenhagen. Part of the reason is that they realise that their emissions portfolio is undergoing a fundamental change and that is working in their favour. That gives them the confidence … [to act] in a more positive way.”

Lin Boqiang, the director of Xiamen University’s China centre for energy economics research, also downplayed the impact the revised coal data would have on the Paris talks.

“What people want to know about at the Paris summit are China’s future emissions projections. We should look forward rather than backward,” he said. “China does have huge carbon emissions but if we look forward China’s emissions will soon peak and begin to fall.”

Fading Coal Industry in China May Offer Chance to Aid Climate

Date: September 21, 2015
Source: New York Times
http://www.nytimes.com/2015/09/22/world/asia/fading-coal-industry-in-china-may-offer-chance-to-aid-climate.html?_r=0

DATONG, China — Across China's grimy coal heartland, mines have fallen silent, reduced production or shut down. Miners, owners and officials here wonder whether boom times will return for the "black gold" that has fed the nation's craving for cheap but dirty energy.

"I think it's finished," said Wang Jinwang, a longtime miner whose salary has been cut by one-fifth.

China's coal consumption weakened last year and through the first half of this year, largely because of a slowing economy, according to statistics from China's largest coal industry analysis group.

But the gloom pervading northern China's coal country could mean brighter prospects for worldwide efforts to slow global warming. Some experts say that if China's coal use continues to slow or even falls, its greenhouse gas emissions could peak years earlier than the government had promised, which could make a critical difference planetwide in limiting rising temperatures and sea levels.

That subject will be on the table when President Obama hosts President Xi Jinping of China at the White House on Thursday and Friday.

American officials have tried to persuade Mr. Xi to make a notable declaration on China's climate commitments during his visit, as he did when Mr. Obama went to Beijing in November. In the United States, opponents of Mr. Obama's climate policies often cite China's growing emissions to argue against reductions from the American side.

There is little expectation that Mr. Xi will promise anything as drastic as he did last year, when he vowed that China's emissions of carbon dioxide would peak by about 2030, a fairly conservative goal. But with international climate talks in Paris less than three months away, any signals the two leaders send from Washington will be closely scrutinized.

"They really need to make sure they're clarifying for the rest of the world that, hey, we've got some serious difficulties to work out on cyber and other issues, and we're not going to step back from that, but that doesn't mean that our climate partnership is any less strong," said Melanie Hart, the director of China policy at the Center for American Progress and an energy and climate change scholar.

Mr. Xi will have to lay out his energy and pollution goals for the rest of the decade by early 2016, when the government settles on its next five-year growth plan. That plan is likely to include tax initiatives, expanded emissions trading and new pollution restrictions, analysts said.

The slowing demand for coal has led to further debate among policy advisers, who are reassessing the goal of reaching a peak in carbon dioxide emissions by 2030. The burning of coal and other fossil fuels produces carbon dioxide, the main greenhouse gas that causes global warming.

If current trends in coal use continue, some experts say, that goal could be moved up to 2025, which the Americans favor. Speeding up the timeline would also require new policies to motivate industries to harness cleaner sources of energy and make the economy more energy-efficient, experts say.

But some officials argue that robust coal use is still needed to keep the economy from slowing too much and too quickly and that sharp cuts to coal use could imperil jobs and prove too costly.

“It’s a question of political will — of whether China can carry through on its current thinking, of whether there’s enough strong political will to refrain from going back to the old mentality,” said Ranping Song, who monitors the emissions-cutting efforts of China and other developing nations for the World Resources Institute.

China consumes as much coal as the rest of the world combined and is the biggest emitter of greenhouse gases, so its decisions will have global import.

One critical question, on which policy advisers and scientists are divided, is whether the dip in coal demand reflects a lasting shift, and a peak in consumption, or a temporary aberration amid a steady trend of growing use.

Some researchers at the Energy Research Institute of the National Development and Reform Commission, the state agency overseeing economic planning and climate change policy, say the change is permanent.

“My team has done a model that says coal use has reached its peak,” said Jiang Kejun, a senior researcher at the institute. “The structure of the economy is changing.”

Likewise, Zeng Hao, an industry analyst here in Shanxi Province, said, “Industry people don’t see any reason why coal demand will pick up again.”

Others see the downturn as a blip that will be reversed in coming years.

“If the economy is in fact tanking and the government can’t stop it, coal consumption could plateau or go down,” said Chris P. Nielsen, a researcher at Harvard University who studies China’s pollution and energy use. “What happens to emissions after the near term, however, is unpredictable, highly dependent again on the economy.”

Both judgments are speculative, and it has been difficult to come up with even an accepted measure of how much coal use has already fallen.

Last week, using official statistics and other Chinese sources, the United States Energy Information Administration estimated that China's coal consumption, as measured by energy use, was flat compared with the previous year, the first such plateau here this century.

Even so, a peak in coal use does not correlate directly with a peak in emissions. Though most carbon dioxide emissions come from coal burning, China's use of oil and gas is rising, primarily because of rising car ownership, which will continue to push up emissions. More thorough combustion of higher-carbon coal could also add to the carbon output.

In fact, even as coal use apparently slowed, carbon dioxide emissions in the country probably rose slightly last year, said Glen Peters, an expert on greenhouse gases at the Center for International Climate and Environmental Research-Oslo.

Capitalizing on the drop in coal demand to slow emissions growth will require a major push from Beijing. Among the steps required to reach an emissions peak much before 2030, researchers say, are enforcing and expanding air pollution controls that limit coal use, shifting the economy away from a reliance on building infrastructure, developing more efficient industrial technology, enforcing energy-efficient building codes and vastly increasing the amount of energy from nonfossil-fuel sources.

"The complexity of the policy changes needed should not be underestimated," said Wang Yi, a professor at the Chinese Academy of Sciences in Beijing who specializes in environmental policy.

A crucial question for policy makers is how to impose a price on carbon, which would encourage companies and consumers to move away from fossil fuels.

One way is to establish a national carbon emissions trading market, which China plans to do. For two years, officials have been experimenting with seven local carbon emissions markets that encourage firms to buy and sell the right to emit. Dabo Guan, a professor of climate change economics who is now a visiting scholar at Tsinghua University in Beijing, said a successful trading market was essential for China to achieve even the goal of reaching an emissions peak in 2030.

"We can't let emissions trading fail in China," he said. "I have a hope that the government can do it properly."

Officials have spoken of establishing a national carbon market by 2017. It would be the largest in the world. But building one that operates smoothly and effectively will not be easy, scholars say. Challenges include ensuring that a large number of companies take part in the market and having enough employees and regulatory overseers to operate it.

Such pitfalls became apparent at the trial markets, said Chai Qimin, a senior director at the National Center for Climate Change Strategy and International Cooperation.

"Companies are not very active in the market," he said, noting that a total of only $177 million changed hands at the trial markets from mid-2013 until late July.

Given the challenges facing a national market, some experts and advisers argue that a direct carbon tax on fossil fuels makes more sense. Damien Ma, a senior fellow at the Paulson Institute in Chicago, favors a tax, which he said “has potential fiscal benefits and is possibly easier to implement.”

Such decisions will be critical, even as the economy slows and demand for coal declines. And political and economic worries could still trump environmental ones.

“If the economy is in trouble,” Mr. Nielsen said, “the government may be tempted to return to infrastructure investment to try to stimulate growth. This is a particularly emissions-intensive way to goose the economy.”

FACT SHEET: U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation

Date: November 11, 2014
Source: The White House https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c

President Obama Announces Ambitious 2025 Target to Cut U.S. Climate Pollution by 26-28 Percent from 2005 Levels

Building on strong progress during the first six years of the Administration, today President Obama announced a new target to cut net greenhouse gas emissions 26-28 percent below 2005 levels by 2025. At the same time, President Xi Jinping of China announced targets to peak CO2 emissions around 2030, with the intention to try to peak early, and to increase the non-fossil fuel share of all energy to around 20 percent by 2030.

Together, the U.S. and China account for over one third of global greenhouse gas emissions. Today's joint announcement, the culmination of months of bilateral dialogue, highlights the critical role the two countries must play in addressing climate change. The actions they announced are part of the longer range effort to achieve the deep decarbonization of the global economy over time. These actions will also inject momentum into the global climate negotiations on the road to reaching a successful new climate agreement next year in Paris.

The new U.S. goal will double the pace of carbon pollution reduction from 1.2 percent per year on average during the 2005-2020 period to 2.3-2.8 percent per year on average between 2020 and 2025. This ambitious target is grounded in intensive analysis of cost-effective carbon pollution reductions achievable under existing law and will keep the United States on the right trajectory to achieve deep economy-wide reductions on the order of 80 percent by 2050.

The Administration's steady efforts to reduce emissions will deliver ever-larger carbon pollution reductions, public health improvements and consumer savings over time and provide a firm foundation to meet the new U.S. target.

The United States will submit its 2025 target to the Framework Convention on Climate Change as an "Intended Nationally Determined Contribution" no later than the first quarter of 2015.

The joint announcement marks the first time China has agreed to peak its CO2 emissions. The United States expects that China will succeed in peaking its emissions before 2030 based on its broad economic reform program, plans to address air pollution, and implementation of President Xi's call for an energy revolution.

China's target to expand total energy consumption coming from zero-emission sources to around 20 percent by 2030 is notable. It will require China to deploy an additional 800-1,000 gigawatts of nuclear,

wind, solar and other zero emission generation capacity by 2030 – more than all the coal-fired power plants that exist in China today and close to total current electricity generation capacity in the United States.

Building on Progress

In 2009, U.S. greenhouse gas emissions were projected to continue increasing indefinitely, but President Obama set an ambitious goal to cut emissions in the range of 17 percent below 2005 levels in 2020. Throughout the first term, the Administration took strong actions to cut carbon pollution, including investing more than $80 billion in clean energy technologies under the recovery program, establishing historic fuel economy standards, doubling solar and wind electricity, and implementing ambitious energy efficiency measures.

Early in his second term, President Obama launched an ambitious Climate Action Plan focused on cutting carbon pollution, preparing the nation for climate impacts, and leading internationally. In addition to bolstering first-term efforts to ramp up renewable energy and efficiency, the Plan is cutting carbon pollution through new measures, including:

- Clean Power Plan: EPA proposed guidelines for existing power plants in June 2014 that would reduce power sector emissions 30% below 2005 levels by 2030 while delivering $55-93 billion in net benefits from improved public health and reduced carbon pollution.
- Standards for Heavy-Duty Engines and Vehicles: In February 2014, President Obama directed EPA and the Department of Transportation to issue the next phase of fuel efficiency and greenhouse gas standards for medium- and heavy-duty vehicles by March 2016. These will build on the first-ever standards for medium- and heavy-duty vehicles (model years 2014 through 2018), proposed and finalized by this Administration.
- Energy Efficiency Standards: The Department of Energy set a goal of reducing carbon pollution by 3 billion metric tons cumulatively by 2030 through energy conservation standards issued during this Administration. These measures will also cut consumers' annual electricity bills by billions of dollars.
- Economy-wide Measures to reduce other Greenhouse Gases: The Environmental Protection Agency and other agencies are taking actions to cut methane emissions from landfills, coal mining, agriculture, and oil and gas systems through cost-effective voluntary actions and common-sense standards. At the same time, the State Department is working to slash global emissions of potent industrial greenhouse gases called HFCs through an amendment to the Montreal Protocol; the Environmental Protection Agency is cutting domestic HFC emissions through its Significant New Alternatives Policy (SNAP) program; and, the private sector has stepped up with commitments to cut global HFC emissions equivalent to 700 million metric tons through 2025.

Expanding U.S. and China Climate & Clean Energy Cooperation

To further support the achievement of the ambitious climate goals announced today, the United States and China have pledged to strengthen cooperation on climate and clean energy. The two countries are expanding their ongoing and robust program of cooperation through policy dialogue and technical work on clean energy and low greenhouse gas emissions technologies.

The United States and China agreed to:

- **Expand Joint Clean Energy Research and Development**: A renewed and expanded commitment to the U.S.-China Clean Energy Research Center (CERC). This will include:
    - Extending the CERC mandate for an additional five years from 2016-2020;
    - Renewing funding for the three existing tracks: building efficiency, clean vehicles, and advanced coal technologies with carbon capture, use and sequestration (CCUS); and
    - Launching a new track on the interaction of energy and water (the energy/water 'nexus').
- **Advance Major Carbon Capture, Use and Storage Demonstrations**: Expanding our work under the Climate Change Working Group (CCWG) and under the CERC, and partnering with the private sector, the United States and China will undertake a major carbon capture and storage project in China that supports a long term, detailed assessment of full-scale sequestration in a suitable, secure underground geologic reservoir. The United States and China will make equal funding commitments to the project and will seek additional funding commitments from other countries and the private sector. In addition, both sides will work to manage climate change by demonstrating a new frontier for CO2 use through a carbon capture, use, and sequestration (CCUS) project that will capture and store CO2 while producing fresh water, thus demonstrating power generation as a net producer of water instead of a water consumer. This CCUS project with Enhanced Water Recovery will eventually inject about 1 million tons of CO2 and create approximately 1.4 million cubic meters of freshwater per year.
- **Enhance Cooperation on Hydroflurocarbons (HFCs)**: Building on the historic Sunnylands agreement between President Xi and President Obama regarding HFCs, the United States and China will enhance bilateral cooperation to begin phasing down the use of high global warming potential HFCs, including through technical cooperation on domestic measures to promote HFC alternatives and to transition government procurement toward climate-friendly refrigerants.
- **Launch a Climate-Smart/Low-Carbon Cities Initiative**: Urbanization is a major trend in the 21st century, and cities worldwide account for a significant percent of global greenhouse gas emissions. In response, the United States and China are establishing a new initiative on Climate-Smart/Low-Carbon Cities under the U.S.-China Climate Change Working Group. Under the initiative, the two countries will share city-level experiences with planning, policies, and use of technologies for sustainable, resilient, low-carbon growth. This initiative will eventually include demonstrations of new technologies for smart infrastructure for urbanization. As a first step, the United States and China will convene a Climate-Smart/Low-Carbon Cities "Summit" where leading cities from both countries will share best practices, set new goals, and celebrate city-level leadership.
- **Promote Trade in Green Goods**: The United States announced that Commerce Secretary Penny Pritzker and Energy Secretary Ernest Moniz will lead a Smart Cities/Smart Growth Business Development Mission to China April 12-17, 2015, focused on green infrastructure, energy efficiency and environmental trade sectors. The mission will highlight the benefits of sustainable urbanization, technologies to support China's air pollution and climate goals, and green buildings opportunities. In addition, USTDA will conduct three reverse trade missions to bring Chinese delegations to see environmental, smart grid, and CCUS technologies in the United States over the next year.
- **Demonstrate Clean Energy on the Ground**: U.S. DOE, State, and USTDA will undertake a number of additional pilot programs, feasibility studies, and other collaborative efforts to promote China's energy efficiency and renewable energy goals. These will include expansion of our

cooperation on “smart grids” that enable efficient and cost-effective integration of renewable energy technology, as well as the implementation through a U.S. and Chinese private sector commercial agreement of a first-of-its-kind 380 MW concentrating solar plant in China.

False emission reporting undermines China’s pollution fight

Date: January 17, 2016
Source: Reuters
http://www.reuters.com/article/us-china-power-emissions-idUSKCN0UV0XS

Widespread misreporting of harmful gas emissions by Chinese electricity firms is threatening the country's attempts to rein in pollution, with government policies aimed at generating cleaner power struggling to halt the practice.

Coal-fired power accounts for three-quarters of China's total generation capacity and is a major source of the toxic smog that shrouded much of the country's north last month, prompting "red alerts" in dozens of cities, including the capital Beijing.

But the government has found it hard to impose a tougher anti-pollution regime on the power sector, with China's energy administration describing it as a "weak link" in efforts to tackle smog caused by gases such as sulfur dioxide.

No official data on the extent of the problem has been released since a government audit in 2013 found hundreds of power firms had falsified emissions data, although authorities have continued to name and shame individual operators.

"There is no guarantee of avoiding under-reporting (of emissions) at local plants located far away from supervisory bodies. Coal data is very fuzzy," said a manager with a state-owned power company, who did not want to be named because he is not authorized to speak to the media.

The manager said firms could easily exaggerate coal efficiency by manipulating their numbers. For example, power companies that also provided heating for local communities could overstate the amount of coal used for heat generation, which is not subject to direct monitoring, and understate the amount used for power.

"Data falsification is a long-standing problem: China will not get its environmental house in order if it does not deal with this first," said Alex Wang, an expert in Chinese environmental law at UCLA.

TOUGHER RULES

Beijing has been toughening and extending its environmental protection laws in recent years. Amended legislation which came into force at the start of 2015 gave authorities more power to punish firms and officials responsible for violations, including falsifying data, subjecting them to unlimited fines and threats of closure.

Coal emission violations cost power producers 635 million yuan ($98 million) in lost subsidies and fines last year, while at least 10 thermal power companies have paid 519 million yuan in fines since 2013 for misusing emissions control equipment in order to meet targets and get subsidies.

Last November, China's environment ministry named two generators in the northeastern province of Liaoning for data fraud as part of a move to publicly shame operators.

In its latest bid to curb pollution, China's cabinet in December ordered all coal-fired power firms to reduce pollutants like sulfur dioxide by 60 percent by 2020, saying it would close inefficient plants and promote advanced low-emissions technology through subsidies.

As an incentive, it offered increased payments to generators that upgrade facilities, with total subsidies estimated to be worth 42 billion yuan ($6.4 billion) a year.

Yet for power plants already under pressure from crippling overcapacity and slowing demand growth, threats of heavy fines or forced closures also offers a powerful incentive to massage emissions numbers.

Halting fraud

The environment ministry acknowledged in December that "a minority of firms were still manipulating emissions control equipment and falsifying data in an attempt to avoid supervision".

To help counter fraud, the government has set up continuous emissions monitoring systems that can share real-time pollution readings with authorities, but critics say these can be manipulated and only cover big state-owned firms.

"The coal power sector has strengthened standards ahead of others, but to really motivate the change to happen, the law must be enforced and that depends on data quality," said Ma Jun, director at the Institute of Public and Environmental Affairs, a non-government organization that campaigns for improved pollution monitoring in China.

Tougher enforcement was also needed.

"The law is not enough," Ma said. "It states that they could even be put in jail, but so far we haven't seen many cases like that."

Environmental group Greenpeace said in December that some plants it investigated in eastern China's Jiangsu province even recorded "negative" emissions, according to data submitted to authorities by the companies.

All 12 of the plants it investigated exceeded emission limits on sulfur dioxide and nitrogen oxides in 2015, the group said.

Fading Embers in China's Coal Industry

Date: February 14, 2015
Source: The Diplomat
http://thediplomat.com/2015/02/fading-embers-in-chinas-coal-industry/

Of all the indicators released about China's 2014 economic performance, some of which are surprisingly positive, China's coal mining industry stands out as one of the worst performing sectors of the year, with a decline in industrial profits of 46.2 percent. The coal mining industry faced falling prices and excess capacity in 2014, after a four-year run, from 2009 to 2012, of above-average prices. The industry's malaise became highly visible in the media last year as several shadow banking loans to coal mining companies faced potential default in 2014. A large part of the drop-off in coal industry profits can be attributed to increased reliance on cleaner sources of energy and decreased dependence on coal around the world and even in China itself.

For one, improved environmental standards around the world have reduced orders for this heavily polluting resource, and China has forced smaller mines to close or be purchased by state-owned companies. About 1,000 small coal mining companies were shut down in 2014. In the past four years, 5,920 coal mines have been closed. Most Chinese mining companies, about 70 percent, incurred losses in the first 11 months of 2014, as national governments have adopted climate change policies that attempt to transfer the reliance on polluting fuels to renewable and cleaner energy.

Second, China is also very slowly decreasing its demand for coal as part of its five-year energy strategy for the 2016-2020 period, from 64.2 percent of total energy consumption to below 62 percent by 2020. Use of some highly polluting types of coal have been banned. As the world's largest coal consumer, China's declining demand for this natural resource bodes well for the environment and for the health of its population, as coal plant emissions alone result in hundreds of thousands of premature deaths due to particulate and heavy metal pollution. Coal miners themselves frequently suffer from pneumonoconiosis, or black lung disease, due to inhalation of coal matter.

The transition to a diminished reliance on coal is difficult, however. Chinese regulators have attempted to maintain coal contract prices in order to maintain economic stability, but even so, coal prices declined 20 percent in 2014. Stockpiles of the fuel at coal mining companies increased 2.6 percent year on year, to 87 million tons, while stockpiles of coal at power plants rose by 17 percent. Excess inventories and overcapacity will likely maintain the pinch in the coal sector over the next year. To combat this, Shanxi province in northern China, one of the biggest coal producing regions in the nation, stated that it would not approve new mining projects until 2020. This represents a dramatic move toward increasing efficiency in coal markets.

How the ongoing decline in coal demand, and its impact on China's primary sector, will play out is yet to seen. On the upside, provinces are falling into line with the national target on coal reduction. Already, twelve provinces have committed to reducing coal use, and the intensive coal-using regions of the Yangtze and Pearl River Delta have been asked by the central government to limit their use as well. While coal production and consumption in China have more than doubled since 2000, these industrial

gains will have to be dampened in order to account for the now-ubiquitously dubbed “new normal” in the energy regime. Short-term pain in this dirty sector is virtually inevitable.

Beijing imposed $28 million in pollution fines last year - Xinhua

Date: January 7, 2016
Source: Reuters
http://www.reuters.com/article/china-pollution-idUSKBN0UM09G20160108

Beijing's environmental watchdog levied fines totalling about 183 million yuan ($27.76 million) for violations of pollution laws in the Chinese capital last year, the state news agency Xinhua said on Friday.

The agency did not offer a comparative full-year figure, but state media reported last year that the 100 million yuan Beijing collected in pollution fines in the first nine months of 2015 was almost twice the amount as the same period during 2014.

The ruling Communist Party has only in recent years begun to acknowledge the damage that decades of growth-at-all-costs economic development have done to China's skies, rivers and soil.

It is now trying to equip its environmental inspection offices with greater powers and more resources to tackle persistent polluters and local governments that protect them.

An amended air pollution law, passed by the legislature in August, grants the state new powers to punish offenders and create a legal framework to cap coal consumption, the Asian giant's biggest source of smog.

Xinhua said the fines included 44 million yuan in nearly 2,000 cases involving air pollution, which has become a hot-button issue in the Chinese capital and other cities frequently engulfed in hazardous smog that worsens during winter.

The authorities imposed fines of 72 million yuan for 181 infringements relating to water and other areas, the news agency quoted the Beijing Municipal Environmental Protection Bureau as saying.

Beijing has put nearly 20,000 pollution sources in key industries under "strict supervision", the bureau said without elaborating.

Beijing's average density of PM2.5 - airborne particulate matter under 2.5 microns in diameter that can penetrate deep into the lungs - from Nov. 15 to Dec. 31 rose 75.9 percent year-on-year, despite improvement in air quality throughout 2015, Xinhua said, quoting official monitoring.

China's Move to Centralize Environmental Oversight

Date: November 25, 2015
Source: The Diplomat
http://thediplomat.com/2015/11/chinas-move-to-centralize-environmental-oversight/

Last month's gathering of top Communist Party officials agreed that China should have "the most stringent environment protection system" as the country aims for greener growth and have environmental consequences built into economic decisions.

Among the numerous green commitments at the fifth plenum, the so-called "vertical management of environmental monitoring and internal inspection functions below provincial levels" was one that longtime observers have hailed as an important move. For them, it harks back to initiatives that are at least ten years old and have endured setbacks over the decade.

The Chinese governance system is characterized by the division between tiao, the vertical line that coordinates according to function, and kuai, the horizontal line that coordinates according to the locality that it covers.

In this system, a municipal level Environment Protection Bureau (EPB), reports both to its "vertical" superiors (the provincial EPB and the central Ministry of Environment Protection) while also being subject to the leadership of its "horizontal" boss (the mayor of the municipality).

As China expert Kenneth Lieberthal observed years ago, the early-day mission of the reform was to "give the horizontal line of authority priority over its vertical counterpart," in doing so "clipping the wings" of functional ministries at the center, while territorial (local) governments became more powerful and enjoyed more freedom within their own jurisdiction. The result was "liberation of thoughts" and a competition to grow the local economy, which has been the engine of China's economic miracle in the past decades.

Things started to look different at the turn of this century. Almost 20 years into the liberalization of China's economy, with the growth machine roaring at full speed, the ecological cost became increasingly evident.

In 2006, two pollution cases shocked the nation for not only their huge impact on human health, but also the complicity of local governments in them. In the first case, a smelter in Gansu province caused more than 2,000 villagers to have excessive levels of the toxic lead in their blood. In another, two chemical companies polluted a river in Hunan province with arsenic, threatening the drinking water of 80,000 people.

What's inexplicable was that in both cases, the polluting companies were labelled as "key protected enterprises" by their local governments. The Gansu county authority even went as far as creating "quiet production days" for the company, barring any "unauthorized" law enforcement inspection on site.

Pan Yue, then deputy administrator of the country's top environmental agency at that time, labelled the local governments as "the ultimate culprits" of the two cases. "Local protectionism" became a buzz word of the environmental field in those years.

It was around that time when the pendulum began to swing back toward the center (the vertical line), as some government departments mooted a clawback of some of the authority distributed to the local governments. The central government in Beijing took the view that if local bureaus continued to be subject to the leadership of their local bosses, the central government's environmental agenda will be fatally undermined.

That was because local governments had the power to fire regional EPB chiefs, to defund their key functions or to freeze their headcounts. But environment was not the only department which was contemplating "vertical management" (in essence a rebalancing of power).

Precedents for Vertical Management

China's industry and commerce inspection administration was one of the first to grab back control over its local branches, citing widespread "interference" in their fight against counterfeit products condoned by local governments. The statistics administration, which is responsible for collecting crucial data about the country's vast economy, followed suit. Leaving that responsibility to local governments created huge difficulties, mainly because of blown-up estimations of local economic activities.

The environmental agency initially started its experiment in a small and timid way. In 2002, the province of Shaanxi piloted "vertical management" of environmental bureaus at the municipal level and below, which led to "better law enforcement at the county level." But the trial also met with resistance from the counties, which resented the fact that with the concentration of authority, original budgets attached to the authority also got "sucked upward."

In 2006, the central agency took a more significant step by creating eleven dispatched inspection centers all over China, an idea modeled on the regional offices of the U.S. Environmental Protection Agency. These inspection centers, although based locally, report directly to and are funded by the political center. But as "dispatched" centers, they do not touch the existing power on the local level and are sometimes seen as interfering with the local governments exercising their legitimate authority.

Finding a Central-Local Balance

Since then, the central agency has made little further progress in the direction of vertical management. In 2008, when it was upgraded into a full ministry, it even had to fight off speculations about more concentration of power. A key obstacle to pushing through the initiative is the concern that it may fragment and cripple governance at the local level. With more and more departments reporting to the top, there is a risk of excessive regulatory interference in disregard of local needs.

More fundamentally, China's environmental law holds local governments ultimately accountable for environmental quality within their own jurisdiction. If they are deprived of key enforcement authority, how can they be accountable for what they are unable to control?

This is probably why in the recent decision by the Party, only a few specific functions of the environmental apparatus are to be further centralized, and these functions (including environmental monitoring and internal inspection) are mainly means for higher level departments to hold their subordinates accountable. Local governments will retain key functions, such as the inspection of industrial facilities that allow them to enforce environmental regulations at the local level.

The tug of war between the center and local has been a perpetual theme of Chinese politics ever since a centralized state was established more than 2,000 years ago. Whenever the center feels threatened by a perceived weakening of its will, an almost instinctive call for centralization would emerge. But as some observers have pointed out, the ultimate challenge lies in the ability to hold local governments accountable at the local level, through local media, public opinion or the judiciary, and not relying on a paternalistic center to keep an eye on everything.

Coal or nuclear? The choice is clear if China is to stick to its pledges to reduce carbon emissions

Date: January 11, 2016
Source: South China Morning Post
http://www.scmp.com/news/china/society/article/1899806/coal-or-nuclear-choice-clear-if-china-stick-its-pledges-reduce

People worry about Islamic terrorism when they are far more likely to be killed in a traffic accident. Likewise, many fret more about nuclear energy when coal burning kills more people every year than all the major nuclear accidents – Three Mile Island, Chernobyl and Fukushima – combined.

Many people have a visceral and not just ideological opposition to nuclear power and to China. Put the two together and you have a cottage industry in opposition. Greenpeace, anyone?

So the fact that the country is rapidly expanding atomic energy necessarily provokes widespread criticism. Yet coal literally kills every day, in a way that nuclear energy doesn't.

A Tsinghua University study in 2012 linked coal-related pollution to 670,000 premature deaths on the mainland from four diseases – strokes, lung cancer, coronary heart disease and chronic obstructive pulmonary disease.

Coal mining is arguably the most dangerous extractive industry in China and the world. Between 1996 and 2002, the official death toll of miners in China was over 7,000 a year. The year 2014 was the first time it dropped below 1,000, at 931 deaths.

China is the worst greenhouse gas emitter in the world, a record for which it has been roundly condemned. The climate change pact reached in Paris last month simply adds to the pressure on China to rely more on nuclear power. If it is to wean itself off coal, nuclear energy has to be part of the energy mix.

You cannot condemn China for using coal and then, when it is committed to reform, condemn it for switching to nuclear energy. Actually, China is also making huge strides in renewables – wind, hydro and solar – especially the latter. But they still make up only 12 per cent of national energy supplies. Its solar panel production has flooded the world market since the global financial crisis and brought world prices tumbling down – something for which China has also been roundly criticised.

The problem is not nuclear energy, but monitoring and transparency. Two decades of excellent safety records at Daya Bay should give Hong Kong people some comfort. The fight for nuclear energy ought to be about safety standards and accountability. You shouldn't throw the baby out with the bathwater.

The US and China Go Local on Climate Cooperation

Date: September 24, 2015
Source: The Diplomat
http://thediplomat.com/2015/09/the-us-and-china-go-local-on-climate-cooperation/

Climate change will likely be a major agenda item during the upcoming summit between Chinese President Xi Jinping and U.S. President Barack Obama, as the two leaders seek to advance climate change cooperation prior to December's UN-led climate negotiations in Paris. While the Paris convention will focus on national and international commitments, cooperative efforts between the U.S. and China are increasingly occurring at more local levels. This trend looks set to continue, and reflects larger-scale subnational climate cooperation all over the world.

The U.S.-China Climate Leaders Summit was held in Los Angeles on September 15-16, and brought together a range of officials seeking local-to-local partnerships for addressing climate challenges. The list of participants signaled seriousness by both parties, with Vice President Joe Biden, climate envoy Todd Stern, California Governor Jerry Brown, and Los Angeles Mayor Eric Garcetti in attendance alongside Chinese leaders from Beijing, Shenzhen, Guangdong, and numerous other major cities and provinces.

Xi followed up on these efforts during his September 22 Seattle visit, at which five U.S. state governors signed an accord to reduce transportation emissions, support clean energy technologies, and exchange ideas with their Chinese counterparts.

Such efforts have the potential to both complement and in some cases overtake the range and reach of highly publicized international climate accords.

Subnational Progress in the U.S.
American intransigence on the international climate stage is well documented. While U.S. negotiators have been active architects for key climate accords, multiple administrations and congresses have resisted entering binding international emissions reductions commitments. This avoidance created and perpetuated divisions between the U.S. and most of its OECD peers, and has impeded global climate change mitigation efforts for decades.

Beneath this much-maligned national inaction has been a steady maturation of climate change mitigation efforts in U.S. regions, states, and cities. Nine states in the Northeast and Mid-Atlantic have operated a Regional Greenhouse Gas Initiative (RGGI) since 2008, which caps CO2 emissions from power plants and facilitates their trade among participants. Thirty-five of the fifty U.S. states have some form of mandate for producing more electricity from non-fossil fuel sources. California launched its own cap-and- trade market, and passed legislation this week to double energy efficiency in buildings and generate half of the state's electricity from renewable sources by 2030. Seattle has committed to become carbon-neutral by 2050, and has an implementation plan focusing on transportation, building efficiency and waste disposal. These areas are densely populated engines of the U.S. economy, and their combined climate mitigation efforts may significantly alter the U.S. emissions trajectory.

The Obama administration is upscaling federal support for such subnational efforts, with programs such as a Climate Action Champion initiative providing resources to communities to increase resilience and reduce greenhouse gas emissions. The administration also touts subnational actions as evidence that the U.S. is a responsible climate change stakeholder, or, as Obama's senior advisor Brian Deese states, that the U.S. is "taking seriously our obligations."

China's Thousand Mile Journey

China's subnational efforts begin from a different starting point but target similar outcomes. While China has long emphasized its development needs in international climate fora, it has grown increasingly responsive to its own vulnerability to the climate change and conventional pollution accompanying its growth – particularly in urban zones.

As such, China is building a climate response regime that begins with cities. In 2011, China launched seven regional carbon market pilots in five cities and two provinces. The pilot areas comprise roughly 25 percent of China's annual GDP, bringing over 1,100 gigatons of CO2 equivalent under regulation. By late 2014, these programs had resulted in trades of over 4 million tons of carbon emissions quotas, making China an emissions trader second in volume only to the European Union.

These efforts – relevant in their own right – also underpin China's plans to launch a national emissions trading scheme in 2016 that will instantly become the world's largest. Local efforts make such future actions less formidable, and are framed by leaders through the ancient philosophies of Lao Tzu as the first steps of a thousand mile journey.

Expanding Cooperation

Both nations' leaders see subnational cooperation as a near-term strategy for working towards national climate change goals the countries mutually agreed to in late 2014.

To this end, the Los Angeles summit launched the California-China Urban Climate Collaborative, an initiative bringing together research institutions, ICLEI-Local Governments for Sustainability, the California-China Office of Trade and Investment, the Bay Area Council, and the Asia Society to assist policymakers in climate action planning and collaboration. Shenzhen, Guangdong, and Los Angeles signed a memorandum of understanding (MoU) to expand best practice cooperation to reduce emissions, while a collection of institutes pledged to design and implement carbon market training programs in China, and to introduce California's zero-emission vehicle credit trading mechanism in Beijing. Los Angeles and Beijing are also planning a litany of cooperative measures on low-carbon urban planning and transportation, while Los Angeles and Zhenjiang have become the first cities to endorse the Subnational Global Climate Leadership MoU. Signatories to this MoU have committed to either reduce greenhouse gas emissions from 80 to 95 percent below 1990 levels by 2050 or achieve a per capita annual emissions target of less than 2 metric tons by 2050, while seeking to influence global climate negotiations through their own concrete local actions.

Feeding into the Global Climate Picture

Localized climate efforts respond in part to frustration with slow international progress, and serve to rebuke top-down models that leave states, cities, and firms dealing with uncertainty and vulnerability.

They also feed into global objectives, however, and when emphasized in large high-emitting countries they attain growing international relevance.

Urban spaces are becoming larger and more powerful, while accounting for growing portions of the global emissions total. The United Nations projects that 66 percent of the world's population will be urban by 2050, up from 54 percent in 2014 and 30 percent in 1950. It is thus not surprising that the U.S. and China view local cooperation as a pathway to reaching larger goals, and have chosen the Los Angeles summit as a forum to publicly redouble their climate change efforts.

Cities and subnational territories also serve as laboratories that can provide valuable models for national and international policymaking. As Los Angeles Mayor Eric Garcetti states, "when two nations, great nations, step up not to point fingers, not to ask questions, but to commit to life-saving changes, we can deliver this not just for our nations but to inspire the world." Such sentiments carry growing weight in light of Obama and Xi's upcoming meetings, and are vital to the future of the global environment.

China's Next Steps After COP21

Date: December 30, 2015
Source: Forbes
http://www.forbes.com/sites/ceibs/2015/12/30/chinas-next-steps-after-cop21/#483797447ba165af50bb7ba1

Hailed as one of the greatest diplomatic efforts of the past 30 years, 196 countries came to an agreement on December 12th, to take steps to reduce the risk of a global temperature rise beyond 2 degrees. An effort that once again went down to the wire, the agreement represents the start of a long road towards climate change mitigation. It's a road that many are already calling unrealistic, but for others the agreement itself was a major achievement because it's the first time that all the major parties, including the United States, were able to reach a consensus.

It's a framework that has imperfections, particularly because it's non-binding and void of specific steps that need to, or will, be taken. However,make no mistake, this agreement should be seen as a solid foundation that will lead to action .

For many, the hard work starts now, but for the US and China, this can be seen as a continuation on the work that resulted in the September US-China Joint Statement on Climate Change. It provided a framework that will ensure that developing countries, like China and India, will (re)set the models for how their countries will try to prosper over the next 35 years, whilst developed countries and regions like the US and EU will look more towards how they can clean up their already mature economies.

It's a framework that in many ways represents what many had hoped would be agreed on in Paris, particularly on areas of emissions commitments, technology transfer, and financing mechanisms.

Going forward though, and in considering the challenges that will be faced as China drives to urbanize another 300 million people by 2030, the agreements made in Paris lay the groundwork for five specific actions:

Reduction in energy intensive industries
As China draws closer to 2030 and the end of its large-scale urban development, which for so long has been the basis of its economy and energy use, its footprint will naturally begin to decrease. With the urban centers well established and growth of its urban population stabilizing, energy intensive industries such as cement, steel, glass, and aluminum will be replaced by a greater contribution of the service economy, and reductions in resources (energy) intensity will be seen throughout the economy.

In fact, natural reductions likely underpin China's confidence that its emissions will peak in 2030.

Increased investment in cleaner energy systems
While there have been reports over the last year that China's coal energy production levels have come down, it's important to remember that in the short term coal will be China's primary fuel . Any divestment from coal will come later. In fact, in the last 12 months, over 150 plants have been approved across the country, which will ramp up consumption capacity.

This doesn't mean China will forgo the targets set out in its agreement with the US. China now leads the way in renewable investment and nuclear installation, but before King Coal is officially declared dead, changes will come through large scale restructuring of the energy industry, increased investment in renewables, improvements in grid connectivity and production side efficiencies.

Investments in energy efficiency

This is an area I have addressed in previous blogs. I view this as one of the areas where China has the most potential to see returns and one that is a vital component in the country's hope of achieving peak emission in 2030.

In fact, in the US-China agreement it was pledged that 50% of new building would be green by 2030. With a large portion of energy consumption coming through energy efficient buildings and cities, the opportunity to mitigate (or even reduce) the energy load required will come through better urban planning, better building standards, and continued retrofitting of existing buildings. This is also likely an area where technology sales/ transfers to China can happen!

Adjusted resource pricing

In the final draft of the agreement there was an emphasis on educating the public on the issue of climate change and sustainable development. Whilst this is a nice sentiment, it's not going to lead to strong enough behavioral change in the short term.

Within China, we see change coming from the rising cost associated with the consumption of energy. People will not be driven to change unless it directly impacts their daily lives , through convenience or economic and financial implications. Recent announcements by China's National Development and Reform Commission and the National Energy Administration to move energy pricing to a more market-orientated system support this point. This is a clear signal that the State sees increased cost of energy to residential, commercial and industrial users as a way to change behavior .

Increased transparency leading to effective legal implementation

Whether driven by its own research showing the impact of pollution on its soils, or increased public concern over the impact air pollution has on urban residents, there has been a clear behavioral shift by the Chinese government in recent years.

It started with statements about needing to find a balance, resulted in the promulgation of new laws, forced the closure, fines, and arrest of those in violation of laws, and has also been behind the government's decision to release PM2.5 data for China's major cities.

In this area, particularly given that challenges are likely to grow in size and scale as China (and the rest of Asia) urbanize another billion people, it can only be expected that the level of interest (and activity) by the government will increase. At times that interest may not feel sustainable, but none the less it has the power to negatively impact the operations of firms in China.

Conclusions

In reality, while many keeping a watchful eye on COP21 were looking for China (and others) to go above and beyond the call of duty, for China the big commitment was made with the US in September . PM2.5 remains a major problem in China's cities and is the driving force behind civil concern and energy restructuring, and the actions explained above are seen not just as a way to reduce carbon, but to provide energy to Asia's billion urban residents without choking its cities.

With much of the above already rumored to be incorporated into the upcoming 5-Year plan, it is clear that whether through the COP process, as part of its drive to reduce PM2.5 emissions, or to feel secure about its energy supplies, China is actively taking steps to identify and address the challenges that its energy system faces . This is a system that is currently adding more power to its grid than all of Europe, every year, and is projected to more than double in size over the next 15 years.

So, while nothing in COP21 is legally binding, I think that in combination with the US-China announcement, China has already begun a process of transacting on commitments to bring emissions under control. It may not be coming out of a sense of moral obligation to the global climate, but perhaps that is why many view China as one of the leaders. Because, beyond the emotions behind the issues, concrete actions are being taken in China every day .

Local Gov’ts Use Newfound Power to Approve Coal-Fired Power Plants

Date: January 15, 2016
Source: Caixin
http://english.caixin.com/2016-01-15/100899841.html

(Beijing) – A decision by the central government to grant more power to local governments regarding decisions on new power plants appears to be backfiring, as local officials have interpreted the move as a green light to build highly polluting facilities.

As part of reform efforts to decentralize power, the Ministry of Environmental Protection in March 2015 handed authority for vetoing power projects on the grounds of environmental concerns to provincial governments.

But the ministry may now be flummoxed to see that the move has resulted in a slew of project approvals by local authorities. In the northern province of Shanxi alone, 23 coal-fired power plants won approval from March to October last year, including two, owned by ChinaCoal Pingshuo Group and China Resources Power Holdings, that the ministry previously shot down because they were too dirty. Three such projects were approved in Inner Mongolia during the period.

A ministry official who participated in the initial assessment of the ChinaCoal and CR Power projects said they were not approved because they failed to meet central government standards. The ministry refused to approve the projects in March, just before it handed out the environment assessment authority, due to concerns about air pollution, said the official who asked not to be named.

But officials in Shanxi thought otherwise. The government of the province, which is rich in coal, has actively promoted plants that use waste from coal mining to generate electricity in recent years as a way to boost economic growth. When the province was handed the power early last year to determine the environmental feasibility of plans for power plants, it gave the green light to the two facilities and others.

"The central government's measure, originally designed to decentralize administrative power and improve efficiency, has been used as an opportunity for local governments who are counting on the coal industry for higher GDP growth," one environmental expert said.

Missed Message

Some of the power plants in question use by-products of coal mining called gangue, slime and middling, a method environmental experts say results in great amounts of emissions. Provinces like Shanxi have been keen to build more of the facilities in recent years as a way to use their large stores of the materials, and most of the new electricity plants approved in Shanxi use coal gangue.

Official data showed that the country produces more than 300 million tons of coal gangue, slime and middling every year, but only about 100 million tons are used by existing electricity facilities. The remaining gangue and slime cover some 13,000 hectares of land, a number local officials would like to see cut.

And storage of the materials creates harmful gases and pollutes soil and water. In November 2011, the National Energy Bureau issued a notice that said the country should stop developing this portion of the coal-fired power plant sector.

Despite this, in June 2013, the bureau allowed the Shanxi government to draft plans to build plants with a capacity of 19.2 million kilowatts in a bid to use up some of the materials. By October that year, the province had approved a number of projects and submitted their plans to the central government for review. However, as of March 2015, many of the projects still had not won Beijing's approval.

The ministry official said using coal gangue to generate electricity indeed cuts waste from mining, but the ministry is concerned about the projects because burning the material results in greater amounts of dust and sulfur dioxide emissions than do plants that consume higher-quality materials.

"The northern China area has no more room for more emissions," the official said.

The environmental ministry said it rejected the ChinaCoal and CR Power projects just before it gave local governments the right to approve plans in the hope that its decision set an example.

The ministry's message did not get across. Said the official: "All of a sudden the projects were approved."

Green Data, a non-government environmental organization, said that work on most of the newly approved projects has started since October.

Way Too Much

Making matters worse is that the plants are being built despite the fact the country has excess electricity. The environmental ministry said that from January to September last year, 155 new coal-fired power plants with total generation capacity of 12.3 billion kilowatts were approved for construction across the country.

That works out to four-fifths of all projects approved by the central government from 2012 to 2014. Most of the new projects are in Shanxi; Inner Mongolia, which is also in the north; and in the western region of Xinjiang.

A November 2015 study by Yuan Jiahau, a professor at the North China Electric Power University in Beijing, shows that Shanxi is expected to generate 21 million more kilowatts than it needs by 2020, and the figure in Xinjiang is 15.5 million. And one official said that if no limits are put in place the country will have a severe oversupply of electricity generated by coal-fired plants by 2020.

Zhou Dadi, former director of the an official energy research institute, said the country "should stop or at least slow construction of coal-fire power plants as soon as possible, especially in the next three years."

China Needs Tax-Fueled Stimulus: Nobel Prize Economist

Date: January 12, 2016
Source: The Wall Street Journal
http://blogs.wsj.com/chinarealtime/2016/01/12/china-needs-tax-fueled-stimulus-nobel-prize-economist/

China's recent market turbulence reflects Beijing's struggles to support the world's second-largest economy, weighed down by debt and overcapacity at home and weaker demand abroad.

One way to provide that support, said Nobel Prize-winning economist Joseph Stiglitz, would be to increase government demand, as China did with a massive stimulus program when the global financial crisis hit.

"People said that we tried it in 2008 and 2009, and it was debt–financed government spending. And it worked. If China had not done what it had done, the world would be in a depression," he said during a media briefing at a UBS Greater China Conference in Shanghai on Monday.

This time, though, he recommends funding the stimulus differently. The last round of big spending left China with a mountain of debt, as well as excess capacity in steel, coal and real estate that's compelling Beijing to accelerate industrial consolidation.

"Excess capacity is a reflection of mistakes made in the past," Mr. Stiglitz said. "The real question is looking forward, making sure that resources are invested well in the coming years." This time around, instead of using debt to cover increased government spending, he recommends rolling out a property tax, capital-gains tax and a carbon tax, the last of which would have the added benefit of spurring demand for energy-saving technologies.

China is trying to balance the roles the market and government play in the economy, Mr. Stiglitz said—but as it moves away from the old regime in which the state had too big a role, it needs to take lessons from the failures of laissez faire.

"We know from the experiences of economies like America's, when the government had too little role you had recessions, depressions and crises. So you do need a balanced role," said Mr. Stiglitz, a frequent visitor to China. Last month he met with Premier Li Keqiang and offered the country's economic planners his views on the government's latest five-year plan to guide development.

Among the issues that call for the government's active participation, Mr. Stiglitz said, are environmental problems, inequality, urbanization, health and financial instability.

Beijing should stop devoting so much energy to vanity projects like the recent push to get the Chinese yuan named a world currency, he said, and instead focus on ensuring the financial sector is able to support new entrepreneurs, small and midsize enterprises and mass innovation.

“All these are much more important than the internationalization of the renminbi,” said Mr. Stiglitz, using another name for the yuan.

China Is Urged to Use Carbon Tax to Tackle Pollution

Date: March 22, 2013
Source: The Wall Street Journal
http://www.wsj.com/articles/SB10001424127887324103504578375633070748140

BEIJING—China should enact a carbon tax and raise fuel and electricity prices if it hopes to tackle the pervasive pollution that is a byproduct of breakneck growth, the Organization for Economic Cooperation and Development said Friday.

Replacing policies that push the cost of gasoline, electricity and coal below market prices and taxing pollution instead would raise money that could be spent on targeted poverty reduction, said the OECD, a grouping of 34 mostly high-income countries.

"You have to get rid of the things that are onerous on the environment, onerous on the budget, and absolutely regressive from an income distribution point of view," said Angel Gurría, secretary-general of the OECD. "Who uses more gasoline? The people who have cars. When you have a blanket subsidy you benefit the wrong people."

Along with other emerging economies like India, Russia and Indonesia, China sets retail prices for gasoline below market levels. The government sometimes allows gas prices to move in the same direction as crude oil prices but keeps a lid on the increase, eating into the profits of state-owned energy giants such as China Petroleum & Chemical Corp. Prices were last raised on Feb. 24, by about 3%.

Electricity and coal prices are also suppressed by the government, leading to cheaper rates for businesses and consumers at the expense of generators and coal producers.

The National Development and Reform Commission, the powerful government agency responsible for setting energy prices, has recently hinted that it may be open to a more market-based system. The current set-up has "obvious disadvantages," said then-chairman of the NDRC, Zhang Ping, earlier this month at China's annual legislative meeting.

Rising prices won't be popular in China, where ordinary Chinese regularly complain about inflation even when the measured consumer price index is low. The government is also wary of rising prices because of the possibility of prompting political complaints. Even in an authoritarian government, public opinion matters.

Finance minister Xie Xuren said last November that the country would begin levying consumption taxes on resource-intensive and polluting goods, and would include coal and water in a new resource-tax system, but he didn't provide a specific timetable for the plan. China has taxed various forms of pollution since 1980, but monitoring and enforcement have been patchy.

The country is not alone in subsidizing fossil fuels. Mr. Gurría said the OECD is pushing other countries to axe such policies through international forums like the G20.

"It's always politically very difficult, whether it's an authoritarian or a democratic country," he said. "In any case you have to explain to people why you're doing it. It's very difficult to tell people it's for their own good when you're raising prices."

However, removing subsidies would help China deal with pollution, an issue of increasing public concern. The environmental costs of China's rapid economic rise have come sharply into focus this year, with air pollution levels soaring in Beijing other parts of China this past winter. In Beijing, the concentration of airborne particles, called PM 2.5, this January averaged nine times the safe level defined by the World Health Organization. That puts it on a par with London's 1952 "pea souper," which is thought to have killed 12,000 people.

China’s Stalk-Burning Clampdown Shows Limits of Command-and-Control

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At the end of the National Day holiday earlier this month, Beijing bid farewell to weeks of relatively good air quality and experienced another episode of “Airpocalypse.” Levels of PM2.5, tiny pollution particles that are deemed particularly harmful to human health, hit 400 micrograms per cubic meter by the second week of October, more than a dozen times higher than the World Health Organization guideline level (25 micrograms per cubic meter).

Official media outlets blamed the latest shroud of smog on crop stalk burning, a practice widely used by Chinese farmers to clear fields after the autumn harvest and which contributes to big rises in air pollution levels in the nearby regions.

It's a recurring problem every year, but this time around, central government used its clout to press for a tough response from local government, with largely weak results.

In the past few months, China’s Ministry of Environmental Protection (MEP) reported 376 cases of stalk burning all across northern China, a 16 percent increase from the same period last year. Each case is a much bigger problem than burning by an individual farmer—the cases are clusters of fires, or “fire spots” detected by satellites, data which is regularly monitored by the MEP.

Henan, Shandong, and Liaoning are among the provinces cited by the central government as failing to deal with the problem. The claimed connection between seasonal agricultural practices and air quality has promoted another debate about how to tackle this perpetual problem of seasonal air pollution related to agricultural practices.

Stalk burning poses a particular challenge for China’s environmental authorities due to the dispersed nature of the problem. The task of regulating tens of millions of small farmers is daunting for the authorities, who are hampered by a serious shortage of resources. The response to fires over many disparate locations also shows the limitations of the central government’s command-and-control approach, which is more effective when applied to large stationary pollution sources such as power plants.

Following the spike in air pollution levels compared with just a few weeks before, the provincial governments rebuked by the MEP initiated massive “no burn” campaigns aimed at stopping farmers from lighting up their fields. In Henan, the provincial government summoned officials from 10 major municipalities and counties to Zhengzhou to highlight their ineffectiveness in dealing with the problem.

One of the counties was fined 20 million RMB (U.S.$3.4 million) for breaches, and local officials even deployed the police force to rein in rampant crop burning. In Zhoukou alone, more than 500 people were detained for setting fire to their fields, and even more people received warnings from the police.

The campaigns did little to solve the problem, however. In Henan, the provincial authority had to repeatedly summon officials from key counties to make its point, an embarrassing sign of its inability to bring the situation under control. The case prompted media to call for a greater reflection on how the country should address the problem.

The stalk-burning problem is a result of fundamental changes in China's rural economy. On the one hand, shifts in the energy structure of the Chinese countryside have reduced the need for straw as a source of fuel for households. On the other hand, the loss of rural labor to the cities has made manual collection of the remaining stalks uneconomic for women and elders left to take care of the fields.

Analysis by Jinzhou's local government, in Hubei province, shows how the problem is exacerbated by several economic factors. Machinery such as combine harvesters could relieve farmers of manually collecting stalks, but clearing this detritus increases the fuel consumption of these machines (due to the additional cutting and shredding operations), reduces their efficiency, and takes a heavy toll on moving parts.

Subsidies

In addition, low straw prices remove incentives for farmers and farm laborers to hire extra hands to do the work. These factors keep the stalk collection rate at just 10 percent in Jinzhou.

Given the numerous economic disincentives for farmers to collect or reuse crop stalks, the regulators should offer incentives rather than relying solely on the administrative stick. The government has a range of options, such as supporting downstream industries with the potential to consume large quantities of crop stalks, or to provide direct subsidies for mechanical collection and shredding.

Parallels

But, for this to happen, governmental bodies other than the environment ministry need to be involved, especially those overseeing agricultural, economic, and financial affairs.

China's difficulty dealing with stalk burning has parallels with other environmental battles. Over the years, Chinese regulators have slowly improved their record with at-source polluters, such as large steel mills or coal-fired power plants. However, when it comes to diffuse sources of pollution, be it stalk burning or urban waste generation, the authorities are often less effective at managing the problems.

Market-Based Solutions

A report by Renmin University, for example, points out that after 14 years of experiments with waste separation in eight major Chinese cities, the practice has been, in the main, unsuccessful. Despite massive advertisement campaigns asking residents to sort their garbage, few cities have managed to persuade their citizens to follow the simple signs on the bins.

Recently, high-level Party documents coming out of the politburo call for more market-based measures to address the country's environmental woes. Whether China can go beyond the clumsy command-and-control approach to keep its wheat and rice fields from being scorched will be a test of the government's ability to reinvent its environmental policy toolbox.