China's Energy Policies and Their Environmental Impacts

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It is a pleasure to share with the Commission our thoughts on China's response to the environmental challenges posed by that country's energy policies and actual energy consumption. This is an important distinction: policy and actual outcomes may differ—and in China, often do.

Let me note at the outset that not all of China's environmental challenges are uniquely associated with energy policy per se. Other forces related to urbanization, agriculture, and international trade also have significant environmental impacts in China. What follows is necessarily an incomplete picture of a complex, dynamic situation.

It is also worth noting that both the U.S. and Chinese governments have embraced the notion that energy security, economic prosperity, and environmental sustainability are interlinked. This is one of the fundamental tenets of the U.S.-China Strategic Economic Dialogue (SED), in which my Agency has been active since its inception nearly two years ago.

Economic Drivers

After one of the world's most impressive reductions in energy intensity—a drop of around two thirds in just over 20 years—China's economy began to become more energy intensive at the start of the current decade. (For background on this point, see the June 15, 2007, testimony before this Commission by Jeffrey Logan of the World Resources Institute.) For the first time, increases in energy consumption began to outpace economic growth, as China's production of highly energy intensive commodities like steel, paper, concrete, etc., powered overwhelmingly by coal, grew rapidly in the first years of this century. Our colleagues at the Department of Energy have estimated that China's use of coal will increase at an average rate of 3.2% per year through 2030. A substantial portion of China's industrial output—upwards of 80% in some sub-sectors—still comes from state-owned enterprises. An analysis cited last year in the New York Times suggests that China's aluminum sector alone consumes more energy than all of the country's commercial facilities combined. As a recent (7/28/08) article in the China Daily put it, "…an increase in heavy exports is stalling the country's progress towards sustainable development."

At the same time, huge growth in the size of China's vehicular fleet, driven in part by rising consumer demand, compels the authorities in Beijing to seek additional sources of foreign oil. The government has sought to cushion the impact of rising oil prices on Chinese consumers with subsidies and price controls. China's fuel price increases this past June, the first in eight months, suggest that economic realities may begin to sink in, as the government works to ease economic pressure on China's refineries. Whether this development has implications for our cooperation on low sulfur fuels is still unclear. I will come back to this point later in my remarks.

As we know, China's current (11th) Five Year Plan (FYP) commits the nation to reduce its energy intensity by 20% by the end of 2010. This is a very ambitious goal--even with the motivation provided by this year's Olympic Games, meeting it seems unlikely. According to the Asian Development Bank, China's energy intensity per unit of GDP actually rose 0.8% in the first six months of 2006. On the other hand, official Chinese sources claim that energy intensity declined 1.23% in 2006 and by more than 3% in 2007. Now that the 11th FYP has passed its mid-point, we need more current information to ascertain China's progress on this vital dimension of energy intensity.

Part of the problem seems to be that the central government, in its determination to rein in growth in pollution and energy-intensive sectors, is limiting the access to domestic capital that Chinese firms need to improve their energy efficiency and reduce emissions. Hence, we see China launching a Green Credit Policy last year that seems more geared to depriving finance from bad actors than providing finance to correct environmental problems or develop environmentally responsible small/medium enterprise. Still, the concept of Green Credit seems to be gaining credence in China, thanks in good measure to work by the International Finance Corporation and the U.S. Treasury Department.

The good news is that China seems to be moving in an economic direction that favors more positive environmental outcomes—slower growth in steel and concrete, faster growth in broadband and services. The reality, however, is that macroeconomic change takes time and requires broad social and political consensus supported by effective policies. In 2007, the Chinese government targeted GDP growth of 7.5%; what they got was 11.4%, with fixed asset investment (buildings and infrastructure) growing at rates of 30-40% in many places. That's still a lot of growth in energy-intensive sectors such as aluminum, cement, and steel, as well as new growth in the automotive and consumer products sectors. And while China has done much to close down smaller, inefficient power plants, its net power generation continues to grow as energy demand growth shows no sign of abating.

Challenges of Environmental Governance

I understand that members of the Commission visited Hong Kong in early April of this year and heard insightful observations about environmental cooperation and reform on the mainland. One informed interlocutor suggested that the locus of real environmental results in China is with regional partners, like Guangdong Province. On the one hand, we are told that environmental and energy efficiency indicators increasingly are being

incorporated into the performance objectives of regional and local officials throughout China. On the other hand, their salaries continue to come from budgets controlled by the same regional and local officials who are also responsible for high employment and economic prosperity. As yet, we know of no Chinese local or provincial official who has been fired for failing to meet an environmental or energy efficiency metric.

In March of this year, as part of a larger restructuring of China's central government apparatus, the State Environmental Protection Administration—SEPA, as we had come to call it for years—was elevated and redesignated as the Ministry of Environmental Protection (MEP). One of the questions posed by the Commission in connection with this hearing rightly focuses on the significance of this action. It is too early to tell whether SEPA's transition to MEP will lead to significant improvement in either China's environmental capabilities or in U.S.-China environmental cooperation. A recent report cited addition of 50 new MEP staff and two new departments at the Ministry's Beijing headquarters. But this only brings their HQ staff complement to several hundred, and we have yet to see the creation of separate, media-specific departments that would signal a major upgrade in MEP's portfolio.

Any large nation with continental-scale variation in regional conditions needs to balance centrally defined environmental standards with regional flexibility in implementing those standards. Here in the U.S., we accomplish this by delegating much planning, permitting, inspection, and enforcement activity to State environmental authorities, with EPA providing oversight and intervening when national standards are not being properly implemented or enforced. EPA's ten regional offices throughout the U.S. embody the Agency's national authority and provide oversight and assistance to State regulators as needed.

China has taken initial steps to establish some form of intermediate presence through the creation of six Regional Supervision Centers (RSCs) located in Beijing, Xian, Shenyang, Chengdu, Guangzhou, and Nanjing. Currently the RSCs have limited authorities and resources; their functions vis-à-vis provincial and local governments are still being defined. My Agency has undertaken an arrangement with the Asian Development Bank to help strengthen the capacity of the RSCs to improve environmental enforcement at the sub-national level. EPA believes that enhanced implementation and enforcement of environmental laws is one of the most promising areas of our cooperative agenda with MEP.

Even in this area, however, the U.S. should not act in isolation from the international community. Many governments and international organizations share our interest in strengthening China's environmental enforcement capabilities. By way of example, in the coming year the European Union plans to launch an environmental governance initiative for China valued at 15 million Euros. And earlier this year, the Government of Norway committed $20 million to a cooperative program with China on climate change—an investment that will require attention to governance and accountability issues if it is to succeed. We should be reaching out actively to such potential partners, to

ensure that our limited resources are not duplicating the well funded efforts of others, and to take advantage of potential synergies.

Working the Energy-Environment Interface with China

China's environmental enforcement challenges are even more apparent when one focuses on the energy sector. The transition from SEPA to MEP has not altered the fact that energy policy is the domain of the National Development and Reform Commission (NDRC), the steward of China's economic planning function. Indeed, the March 2008 restructuring seems to have further consolidated NDRC's hold on national energy policy by creating a new National Energy Bureau, headed by NDRC vice chairman, Zhang Guobao. Earlier speculation about creation of an "energy super-ministry" independent of NDRC has proven unfounded, at least so far. New national energy legislation has been drafted but has yet to be acted upon.

NDRC's dominance of the energy-environment policy interface in China is reflected in its prominent role under the SED and under the SED's legacy initiative, the Ten Year Framework for Energy and Environment Cooperation. This has been a mixed blessing. While EPA has been able to engage in productive dialog with NDRC on several issues, we have been unable to achieve practical breakthroughs in other areas. As I believe our DOE colleagues will agree, it appears that the March restructuring has generated some institutional ambiguity that NDRC has not yet resolved with other parts of the Chinese central government.

Even earlier, despite best efforts of our Treasury Department colleagues, progress with NDRC under the SED umbrella has been challenging. One important example concerns China's transition to low sulfur automotive fuel on a national scale. Several years ago, SEPA announced that China would adopt a series of increasingly strict vehicular emission controls that generally track with the European Union's Euro I-VI standards. This is all to the good—in China as elsewhere in the world, transportation is fast becoming the principal source of urban air pollution and related public health concerns. EPA has been actively engaged in the international effort to address this problem, both bilaterally and via the UN Partnership for Clean Fuels and Vehicles. Chinese government and commercial organizations have participated in this effort, and Beijing hosted a meeting of the Partnership earlier this year, with participants from 22 countries in attendance.

However, a 2006 study by the International Council for Clean Transportation (ICCT) highlighted a problem that continues to confront China to this day: the fuel quality standards needed to support China's increasingly rigorous tailpipe emission controls are not in place, nor has the national government, to our knowledge, publicly indicated any intention to implement them. Without a reliable supply of low sulfur fuel, it will be impossible to achieve the Euro emission standards (e.g. the Euro IV standards scheduled for implementation in 2010). This is a particularly curious situation given China's integrated five year planning cycle and NDRC's central role therein. If in fact progressively tighter vehicular emission controls are a matter of national Chinese policy,

NDRC should be eager to tap foreign experience in making the transition to cleaner, low sulfur fuels as efficiently and as economically as possible. In theory, the issue lends itself well to the interdisciplinary engagement offered by the SED process, where energy and environmental problems can be considered in the context of commercial, technological, and other considerations.

Despite some encouraging signals at SED III last December, we have been unable to make significant progress with China on this question of low sulfur fuel to accompany stricter emission controls. We have made it clear to the Chinese side that EPA views the low sulfur fuel issue as something of a test case for the Ten Year Framework for Energy and Environment Cooperation, one of the premier outcomes of SED IV this past June. It is possible that China's fuel price increases announced shortly after SED IV signal a greater willingness to engage on this question. With continued support from Secretary Paulson's staff at Treasury, we are hopeful that real progress can be made on this front by the time of SED V in December.

Perhaps the broader point here, based on our limited experience under the SED, is that China's economic future could benefit from greater integration between energy and environmental policies. If the Commission is not already familiar with it, I can commend to your attention a 2007 World Bank study entitled, Sustainable Energy in China: The Closing Window of Opportunity, which addresses this problem and others bearing on the sustainability of China's energy sector.

Assessing Consequences and Costs

The Commission has asked for the Administration's policy and perspectives on the environmental consequences and costs of China's energy consumption, both to China and to citizens here in the U.S. Let me speak to the latter question first.

One encounters occasional statements in the press to the effect that "EPA has estimated that X percent of Y pollutant deposited in/near the West Coast of the United States originates in China". Let me assure the Commission that such statements are inaccurate. EPA has not at this juncture ascribed a fixed proportion of this country's air pollution burden, or that of any region of our country, to sources in any one foreign nation. EPA experts participate in various national and international efforts to address this question. One of the most promising is a study by the National Academy of Sciences, commissioned earlier this year by EPA and several other U.S. Government agencies, to assess the significance of international transport of air pollutants. This effort will seek to summarize the state of knowledge regarding:

- the international flows of air pollutants into and out of the United States and across its various regions on continental and intercontinental scales
- the impact of these flows on the achievement of environmental policy objectives related to air quality or pollutant deposition in the United States and abroad, including impacts on air quality and climate change

Academy studies are deliberate undertakings and this one is no exception; we expect the results to be made public late next year.

The environmental costs and consequences of energy consumption within China have been addressed by several authoritative sources in recent years, albeit not without controversy. Last summer, considerable press coverage surrounded a World Bank study, carried out in consultation with SEPA and various Chinese experts, addressing the environmental cost of pollution in China. One of the findings suggests that ambient air pollution affects public health in China to the tune of 3.8% of GDP. Another indicates that crop damage from acid rain amounts to 1.8% of China's agricultural production. In her testimony before this Commission last year, Jennifer Turner of the Wilson Center's China Environment Forum (CEF) cited a number of other estimated pollution impacts.

Perhaps the most sophisticated attempt to quantify the health damages of air pollution in China in recent months has been last year's Harvard University study, Clearing the Air: The Health and Economic Damages of Air Pollution in China (Cambridge, MA, 2007). Careful to point out the limitations of such estimates, the authors have estimated that China's national health damages due to air pollution *in 1997* amounted to 1.8% of GDP, with a range of 0.65% to 4.7% of GDP depending on various parameter inputs. It is reasonable to assume that the current value, over ten years later, would be substantially higher. The Harvard study also includes a useful survey of previous efforts to valuate China's pollution burden.

Collaborative Responses

How should EPA respond to this situation? How can we, a domestic U.S. regulatory agency, make a difference in China's energy and environmental profile, while advancing core U.S. interests? Let me offer several suggestions regarding a path forward.

1) *Continue with what works.* We seem to be nearing a watershed in our efforts to help China launch a national sulfur dioxide emissions trading system for that country's power sector. Having recently completed the Joint Economic Study of pollution abatement policies in our respective electric power sectors, we believe that China is positioned to proceed with SOX emissions trading on a national scale. Much remains to be done in terms of institutional capacity building, but we are confident that China is committed to this critical policy reform, one that will provide cost-effective environmental benefits. I should also note that the Asia-Pacific Partnership on Clean Development and Climate (APP), in which EPA participates actively, is an Administration priority designed to accelerate development and deployment of clean energy technologies, and to help meet energy security, air quality, and climate change goals in ways that promote sustainable economic growth and poverty reduction. EPA's Office of International Affairs also co-chairs the Environment Working Group (EWG) of the U.S.-China Joint Commission on Commerce and Trade (JCCT), along with the U.S. Department of Commerce and China's MEP. The EWG seeks to enhance cooperation between the U.S. and China on environmental protection issues while promoting commercial relations and trade in the environmental sector. The EWG is currently organizing the first U.S.-China Environmental

Industries Forum. By bringing U.S. and Chinese government and industry representatives together, the event should serve to facilitate the development of policies, relationships, and projects that support the deployment of environmental technologies while addressing environmental concerns.

2) *Strive for greater public access to accurate environmental information.* An informed public and a transparent regulatory process are bedrocks of sound environmental policy. China has made considerable strides on these fronts in recent years, but much environmental information remains off-limits or unevenly available. We look forward to incorporating into EPA's formal program of cooperation with MEP a range of activities on environmental information management.
3) *Coordinate more actively on China's environmental challenges, domestically and internationally.* EPA's Office of International Affairs has already engaged productively on China with the Asian Development Bank, the U.S. Business Council for Sustainable Development, the World Environment Center, and other interested organizations, at home and overseas. We plan to expand the discussion on China with other potential partners—e.g. the European Commission, UN Environment Program, the World Bank. The challenges of environmental quality in China are far too great for any one country to address in a vacuum. Some of China's energy-related environmental impacts (e.g., mercury emissions from coal combustion) are already the focus of international attention. And we owe it to the American taxpayer to ensure that our efforts gain maximum leverage from other sources.
4) *Seek greater integration of energy and environmental policies in China.* This has been and remains an important goal of the Asia-Pacific Partnership already mentioned. Additionally, through the SED's Ten Year Framework, we hope to integrate environmental outcomes into joint action plans on "Clean and Efficient Transportation" and "Clean, Efficient, and Secure Electricity Production and Transmission." Our cooperation with MEP will enhance their ability to design and implement economically sound regulatory programs in support of Ten Year Framework energy goals. Working with our U.S. interagency partners, we will promote win-win efforts in China such as "green credit", energy efficiency consumer labeling, and reduced barriers to trade in environmental goods and services.
5) *Pursue productive contacts with Chinese sub-national jurisdictions.* We are working with USG partners as well as NGOs, States, and the academic community to help China improve environmental governance at both the national and provincial level. Some of the most innovative environmental policy initiatives in China are coming out of selected provinces and municipalities (e.g., Beijing, Guangzhou, Shenzhen, and Guangdong Province). At the same time, implementation and enforcement on the ground remains a weak link in China's environmental governance system. Pilot projects outside of Beijing have long been part of EPA's cooperative repertoire in China, but it may be time to shift our focus more toward sub-national jurisdictions. Capacity building work with MEP's regional supervision centers may offer a channel in which to advance this goal. Other avenues include the eight APP sectoral task forces and, potentially,

Let me close by restating the obvious: there is only so much that EPA can do in and with China. Resources (both human and financial) are always limited, and our first duty is to the citizens of the United States. But we are confident that, within our modest means, a well targeted collaborative effort with China will pay ample dividends on our investment, to the benefit of our people, the people of China, and the international community.

Thank you for your attention. I welcome your questions and comments.