COMMENTARY

Energy Efficiency in China: Impetus for a Global Climate Policy Breakthrough?

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With only limited domestic energy resources and sustained rapid economic growth, China has come to dominate the growth in global oil demand, contributing to record high oil prices over the past year—between 2002 and 2005, China's oil demand increased by a third. With China's electricity demand also growing at an alarming rate, staggering investments in coal-fired power generation capacity have failed to keep pace with peak demand, while causing serious environmental harm and hampering economic development. These developments underline the significance of China's energy and environmental policy choices and the global impact they will have. This crisis is catalyzing new thinking on energy efficiency and renewable energy in China, creating an opportunity for a breakthrough on global climate policy.

The Eleventh Five-Year Plan (FYP) represents a bold shift in government strategy towards a "scientific approach to development." For the first time, the Chinese Communist Party formally proclaimed that economic growth (measured in GDP terms) is not an adequate measure of economic development. In light of the growing energy challenges, China's leadership has made a clear commitment to building a more efficient society, which is crucial to achieve the dual quantitative objectives of the Eleventh FYP, namely:

- Doubling of per capita GDP between 2000 and 2010; and,
- 20 percent reduction in energy consumption per unit of GDP over the period 2006 to 2010.

Whereas China is well on track to attain the economic growth target (which would continue the trend in GDP growth achieved between 1980 and 2000), the energy intensity target is much more challenging. China must both develop its rural economy (which will generate greater demand for energy services) and make the fast growing urban economy more competitive. In the aggregate, the demand for energy services is expected to remain positive for decades to come, but energy efficiency can play a key role in ensuring that this demand is met in a less energy- and greenhouse-gas intensive way. The interdependent drivers of future demand growth include:

- Investment in new residential, commercial, and industrial infrastructure in response to population and economic growth from both migration and urbanization. This will require energy for construction materials (steel, copper, cement, glass, and brick), building operation (heating, hot water, ventilation, cooling, and lighting), and household and office equipment;
- Expansion of industrial production to serve both domestic and export markets; and,
- Transport sector development, including expansion of the national highway network, increasing car ownership rates, and construction of public transportation and rail systems.

Although the energy intensity of the economy declined by over 50 percent between 1980 and 2000 while GDP quadrupled, energy consumption per unit of GDP has begun to climb again as a result of more energy intensive investment, industrial, and export activities. Yet China's remaining potential to improve energy efficiency is staggering: with electricity demand currently growing at approximately 15 percent annually, the need for huge new generation capacity through 2020 could be eliminated through efficiency improvements which would bring China in line with international best practice.

Globally, there is a massive failure to capitalize on the full potential of demonstrated high-efficiency supply-side and end-use technologies to mitigate climate change. Yet as recent energy scenarios generally agree, energy efficiency will make the most important contribution to climate mitigation over the next decades (the International Energy Agency expects demand-side energy efficiency alone to account for two-thirds of mitigation in its Alternative Policy Scenario 2006). According to the Third Assessment Report of the Intergovernmental Panel on Climate Change, adoption of existing high-efficiency technologies would make it possible to reduce global emissions to below 2000 levels by 2010 to 2020. Half of the potential reductions would result in direct benefits (energy saved) exceeding direct costs (net capital, operating, and maintenance costs). With the price of a ton of 2008-vintage CO_2 allowances in the EU Emission Trading Scheme generally above €17 per ton ($23)—and stricter commitments on the horizon for the future—the feasibility of realizing this untapped potential is evident.

It is in China's best interest to become a leader in energy efficient technology development, domestic deployment, and export. The government wants to encourage development of the high-tech export sector, decrease dependence on foreign oil, and reduce pollution associated with the use of fossil fuels. China already has a domestic high-tech industry capable of producing products (cars, appliances, lighting, motors, and electronics) that meet the toughest efficiency standards worldwide, as well as great potential for domestic deployment. Thus, the country could take the lead in setting international standards, while improving product quality and branding to better compete in international markets and retain a larger share of value added in China.

With its Energy Conservation Law and plans to implement the energy saving provisions of the Eleventh FYP, China is well positioned to aggressively address barriers to energy efficiency domestically, while playing a proactive role in the UN Framework Convention on Climate Change (UNFCCC) negotiations.

The United States—which is responsible for 25 percent of global greenhouse gas emissions—has rejected the Kyoto Protocol and demanded action from China before it will commit to significant greenhouse gas emission reductions itself. China has no binding greenhouse gas emission limitation commitments under the UNFCCC/Kyoto Protocol. To break the current policy deadlock, it will be crucial to engage both the United States—the largest single emitter, with emissions growth of over 30 percent since 1990—and key developing countries that have large and rapidly growing greenhouse gas emissions, such as China, Brazil, India, Mexico, and South Korea. This is a difficult challenge, given heavy global dependence on greenhouse gas emitting fossil fuels, national interest, and equity considerations. Energy efficiency represents a promising field for negotiating agreement on a future global climate regime, because energy efficiency is widely attractive to both developing and industrialized countries, due to its large potential, relatively low cost, and multifaceted contribution to sustainable development.

In fact, China should do a much better job of communicating the greenhouse gas emission reductions it has already achieved through energy conservation measures introduced since 2000 (e.g., Medium- and Long-Term Energy Conservation Plan, Renewable Energy Law, Maximum Limits of Fuel Consumption (L/100 km) for Passenger Cars). If China takes the lead, the United States and Europe must respond constructively and are in a good position to commit to—and demonstrate leadership on—energy saving measures, so there are good prospects for international consensus.

China would be well positioned to promote a protocol on energy efficiency that is consistent with the policies and measures it has adopted to promote the country's "scientific approach to development"—such as programs in promoting an energy efficient and resource saving economy, energy efficiency standards, revision of power tariffs (to send proper price signals to consumers and provide incentives for utility-sponsored energy-saving programs), and new product/resource taxes. The Chinese leadership could catalyze a much needed political debate on launching a global energy efficiency offensive in the near term as a means of tapping into low-cost greenhouse gas reduction potential immediately, which can buy time to develop new technologies and fuels and to build the public support and political will needed to adopt policies to reduce emissions even further.

The Eleventh FYP demonstrates an understanding of the symbiotic match between the ethics of sustainable development—which has its foundation in long-term holistic thinking and respect of nature—and the aim of achieving an all around well-off society, based on a scientific approach to development. The policy rhetoric on energy saving is strong in China, but the government needs to work with international partners to overcome its deficit in policy formulation, implementation, and assessment. Climate policy leadership on energy efficiency would not only be beneficial to China, but could also serve as a catalyst to break the current climate policy deadlock.