

Helping China Manage Energy Growth

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China has had remarkable success over the past three decades in lifting itself from the ranks of the world's poorest countries. Economic liberalization policies adopted in 1979 have gradually replaced Soviet-style central planning with a market-style economy. Less than half of the country's gross domestic product is produced by state-owned enterprises and prices for most goods and services are set in the marketplace. Structural adjustment, tax reform, hard-budget constraints, and price rationalization have all played important roles in improving China's economy.

During this remarkable period of change, energy use in China grew only about 60 percent as fast as the economy. In most developing countries, growth in energy consumption far outpaces economic growth. China's success in managing energy growth may be faltering, however. Data indicate that energy demand grew perhaps one-third faster than GDP in 2002-2003 as production of energy intensive materials such as steel, cement, and chemicals expanded at extraordinarily high rates.

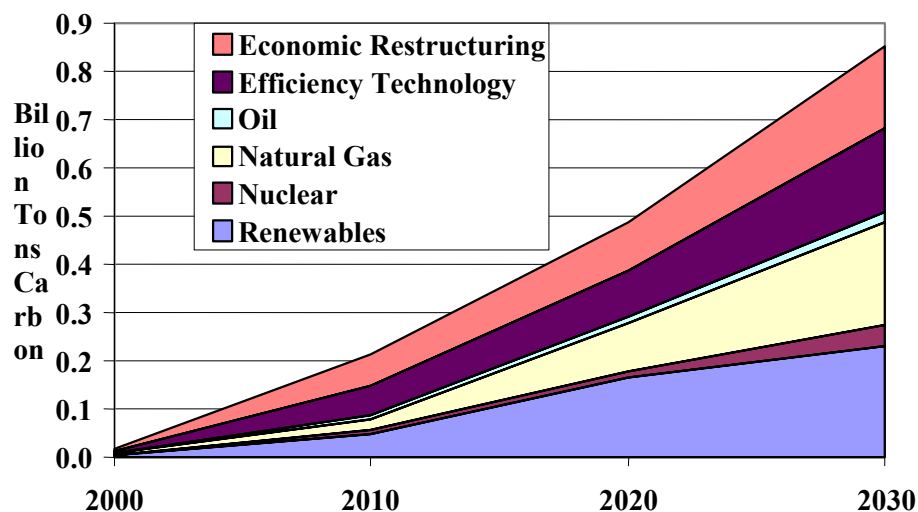
Already China ranks as the world's second largest energy consumer and the second largest national source of greenhouse gas emissions, mainly as a result of fossil fuel combustion. Even so, per capita energy use and emissions average just one-twelfth that of the United States, the largest emissions source, and roughly half that of the world as a whole.

Motivated by a need to conserve capital and reduce pollution, China has over the past two decades taken actions that, compared to expected levels, reduce its energy use and current annual emissions of greenhouse gases by 250 million tons of carbon-equivalent per year. If China continues on the current business-as-usual course, however, Chinese energy demand could grow nearly four-fold by 2050, with a commensurate increase in carbon emissions.

China's Energy Research Institute (ERI) has identified substantial opportunities for energy-related emissions reductions (see Figure 1).

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Figure 1: Potential Chinese Emissions Mitigation by Measure, 2000-2030



Source: Chandler et al., 2002

Efficiency, renewables, and natural gas appear to hold the greatest potential for emissions reduction. Efficiency and renewables have received explicit attention from Chinese planners for some time. The Tenth Five-Year Plan placed high priority on market mechanisms to allocate resources. It also assigned high priority to improving environmental protection and to improving energy efficiency, even elevating its importance to be equal to that of energy development.

The Chinese government and its research institutes are actively engaged in the elaboration of the Eleventh Five Year Plan. Although this plan is not yet completed and policy decisions have not been taken by the State Council, a broad outline is evolving and being communicated to the public. The Eleventh Five Year reportedly would strengthen energy efficiency policy with respect to energy exploitation. It has been proposed that energy conservation be made a higher priority than development of supply, at least in the immediate future. The Eleventh Five Year Plan would specifically advocate and promote:

- Demand Side Management (DSM) and Integrated Resources Planning (IRP)
- Energy Management Company (EMC) businesses
- Government procurement policies for energy efficient products
- Voluntary agreements for energy conservation in selected sectors

With respect to renewable energy and new energy sources, the plan would promote:

- Industrial development of renewable energy
- The development of advanced renewable energy technologies, including wind power, biomass generation, and solar power, and
- Market demand for renewable energy through partnerships or collaboration between government and market players.

The plan also envisions strengthening education and training on energy conservation and renewable energy laws and regulations, policies, and technologies, as well as their economic benefits. Elements of the new plan seemingly acknowledge a well-known problem of Chinese energy efficiency and renewable energy policy, which is that it lacks specificity.

Because of the interest demonstrated by Chinese policy makers, international donors have made substantial investments in energy efficiency and renewables in China. The World Bank, the Asian Development Bank (ADB), and the United Nations Development Fund, working independently and with the Global Environmental Facility (GEF), have supported efforts to increase efficiency of energy use in buildings, transportation, and industry and have also invested in development of renewable energy sources, particularly wind energy. Independent foundations have also joined these efforts.

Natural gas was ignored throughout much of modern China's history, but has now been allocated priority in China's 5-Year planning process because of its cleaner-burning characteristics. International donors have only recently shifted their attention to the importance of developing markets and technologies for use of natural gas in China. ADB has conducted one fact-finding mission on this topic, but has initiated no projects. GEF has sponsored two projects with a specific focus on natural gas.

Most economists expect China's high rates of economic growth to continue for decades. China anticipates reaching middle level developed country status over the next three decades. Chinese policy makers and international donor agencies need to stay focused on the many opportunities for incorporating efficient, low-carbon energy strategies during this unprecedented period of economic expansion.