



Energy and Climate Policy Action in China

An aggressive energy intensity target and a national renewable energy standard highlight a suite of Chinese policies that will slow greenhouse gas emissions growth.

In a development little noticed by many in the international community, China is already putting numerous domestic energy policies and programs in place that will result in significant progress toward reducing its greenhouse gas output from a business-as-usual scenario.

China's Major Energy Policies

Despite China's rapid growth and its relative poverty (less than 1/10 the U.S. GDP per capita), Chinese decision-makers have set aggressive domestic energy targets under several policy frameworks. Unveiled in June 2007, "China's National Climate Change Programme" highlighted many of these energy policies as key elements of China's climate change mitigation efforts. To date, China has:

√ **Adopted a 20% Reduction in National Energy Intensity by 2010**

- China has reduced national energy intensity (energy use per unit GDP) in each of the past two years: by 1.6% in 2006 and 3.7% in 2007¹. If China meets analyst expectations of an above 4% decrease in energy intensity this year, it will be approximately on target to make the 20% goal by the end of 2010.
- China's Top 1000 Enterprises program—which comprises 33% of China's total energy consumption—is also on track to meet its 2010 target to reduce energy intensity by 20%, a key contribution to the overall national goal and an encouraging trend in industrial efficiency.
- China is shutting down many polluting and inefficient factories. In 2007, it shut down 1000 cement plants, small power plants producing a total of 14.4 GW of power, as well as inefficient steel, aluminum, paper, glass, and other production facilities.

√ **Passed a National Renewable Energy Standard of 15% by 2020**

- In 2005, China set two wind power goals — 5 GW by 2010 and 30 GW by 2020 — but it has consistently outpaced them. By 2007, it had already reached 5 GW, and it raised its 2020 target to 100 GW.

- China's solar industry is growing rapidly. China produced 35% of the global supply of solar PV in 2007, up from 20% in 2006², most of which are exported to other markets. However, with continuing decreases in solar technology costs, domestic use should start to grow. China already accounts for 70% of global production and use of solar hot water heating systems³.
- Non-fossil energy sources such as organic and municipal waste and methane gas captured from coal mining are playing increasingly important roles in energy production in both the public and private sectors. Just last year the national government added a 0.25 yuan feed-in tariff to encourage biomass use in power production with a goal of reaching 30 GW of biomass-to-power by 2030. This is in addition to industrial biomass use, with already 1600 such plants in operation nationwide, and over 50 cities running waste-to-energy plants. China's national goal is to process 30% of total municipal waste into energy by 2030⁴.

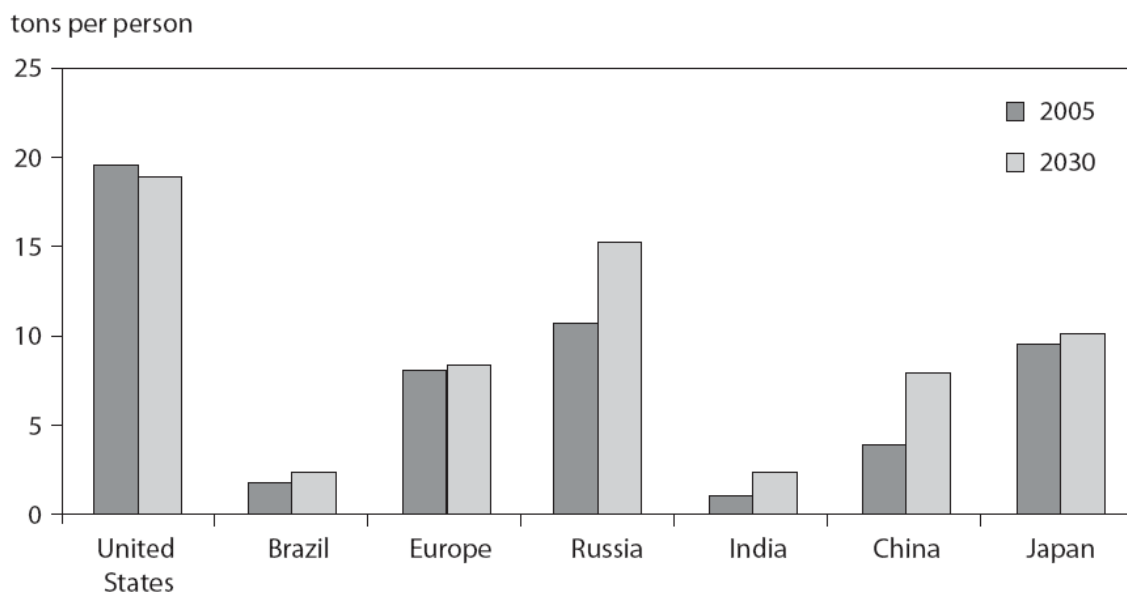
To meet the national energy intensity target, China has also:

- **Established rural vehicle fuel economy standards** - As of June 1, 2008, on-road, off-road, and farm vehicles in rural areas are now covered by Chinese fuel efficiency regulations, which already require an average fuel economy standard of 34 mpg⁵. This will more than double the number of vehicles in China required to meet this standard.
- **Mandated new efficiency goals for industry** - China's new Energy Conservation Law went into effect on April 1, 2008. This law requires all local governments to submit their plans for increased urban energy efficiency, including buildings and public transportation, to the central government, and added industries to the previous 1997 law, among them construction, transportation, and government buildings.
- **Increased building efficiency** - Thanks to clearer regulations and increasing enforcement, progress is being made in new building construction. According to recent government statistics, 97% of new buildings in urban areas meet efficiency codes at the design stage and 71% at the construction stage, up respectively from 17% and 1% in 2006⁶.
- **Increased intercity and urban transit capacity** - China's intercity rail system has experienced 6 upgrades in the past 10 years. The latest efficiency upgrade covered 9 major routes in 17 provinces and increased railway shipping capacity by 18%. According to officials from the Ministry of Railways, 6003 km of track from 18 main lines have been approved for high-speed operation. For example, by 2013 travel time from Beijing to Shanghai will drop from 13 to 5 hours. In addition, public transportation in at least 15 major cities is being significantly improved⁷. For example, Beijing added three new subway lines, a light-rail connecting downtown and the airport, and bus rapid transit.
- **Set goals for energy efficient lighting** - The National Development and Reform Commission (NDRC) has set a goal for China to use an additional 150 million energy efficient lights (e.g., compact fluorescents) by 2010. The Ministry of Finance provides a subsidy that reduces the wholesale cost of these lights by 33% and the retail cost by 50%. In many areas, citizens pay only 10% of the cost, because local governments offer an additional subsidy of 40%⁸.
- **Committed to more efficient, less polluting coal power** - China's NDRC has required that all new coal-fired power plants be either ultra supercritical or supercritical. This is the state-of-the-art in ready-for-market coal-fired plant technology and means that the average new coal-fired power plant in China is among the best in the world – better than that required in the United States. In addition, China is moving ahead with its own plans for integrated gasification combined cycle (IGCC) coal-fired power plants faster than the world community.



- **Sought new energy sources** - China currently has implemented some 60 coalmine methane extraction projects, including the world's largest coalbed methane to electricity project (using Caterpillar equipment) in Shanxi province. Having seen the value of coalmine and coalbed methane, both to provide energy and to reduce emissions of methane, a very potent global warming gas, the Ministry of Environmental Protection now requires methane capture and use for those coalmines that emit larger volumes of methane. The IEA projects a 40% growth in coalmine and coalbed methane utilization this year, which will mean for the first time an absolute decrease in coal-related methane emissions. China expects this figure to double again by 2010, resulting in 80% of the resource being used⁹.
- **Removed environmentally-damaging subsidies** - In 2007 China removed the Value Added Tax (VAT) rebate on steel, cement, and other energy-intensive exports. This removes an incentive to export and acts as the equivalent of a tax on these exports. For example, we calculate the removal of the VAT rebate on steel is the equivalent of a \$50 per ton carbon tax on steel exports. China's production of energy-intensive products has been to support its own infrastructure development. Over the past two decades China has built 2,495,000 km of roads, 21,400 km of rail lines, 127 new airports, 29 new port facilities, and increased building square footage by ten times¹⁰. As a result, most of its energy-intensive production goes into the domestic economy. It exports only 1.5% of its cement and 3.5% of its steel, and an even lower proportion to the U.S. – less than 0.4%. With the VAT change, exports are actually dropping. As infrastructure demand is satisfied, we expect heavy industry growth to slow. In the past half year China's steel production dropped by 2.7% and its cement production, after growing at double digits for the past decade, slowed to 0.8% growth¹¹.

Per capita CO₂ emissions, current and projected



Sources: Economist Intelligence Unit Country Data, Bureau Van Dijk Electronic Publishing, 2007; IEA (2007b). Brazil 2030 forecast is from International Energy Agency, *World Energy Outlook 2006*.

While China and the United States today emit approximately the same amount of greenhouse gases, it is worth noting that China's per capita emissions are only 1/5 of those of the United States (see figure¹²). As China and the Chinese people aspire to economic development levels on par with the United States, it will be critical to de-link economic growth with greenhouse gas emissions. The decarbonization of China's economy is beginning with the steps taken in policy today. The United States and China together must move beyond conventional coal to meet economic aspirations and develop global greenhouse gas stabilization goals.

WRI and Climate Policy in China:

The **World Resources Institute (WRI)** is drawing upon the Institute's technical expertise, research, analytical tools and history of effective private sector convening to help the Chinese government succeed in meeting its energy and climate goals. Relevant WRI projects include:

- The **GHG Protocol Initiative** is a partnership of businesses, NGOs, governments and academics convened by WRI and WBCSD. The *GHG Protocol Corporate Accounting and Reporting Standard* has emerged as the pre-eminent international standard for preparing a corporate-wide GHG emissions inventory. Last year the Protocol team began developing GHG standards and programs in China focused on the country's most energy intensive sectors - power, cement, steel and petroleum. <http://www.ghgprotocol.org/programs-and-registries/china-program>
- In early 2008 Deborah Seligsohn, Director of WRI's China Climate & Energy Program, presented "**China and Climate Change**" briefings hosted by Senators Snowe and Kerry, and by the House Select Committee on Energy Independence and Global Warming. Contact Lydia Weiss at Lweiss@wri.org for the powerpoint presentation.
- WRI is partnering with Tsinghua University's Low Carbon Institute to develop **joint policy research** in areas ranging from CCS and emissions calculation to technology transfer and financing. In addition, WRI is working with the Energy Research Institute under the National Reform and Development Commission on climate change and energy security.
- WRI's **New Ventures China** project promotes sustainable growth by accelerating the transfer of capital to small and medium enterprises (SMEs) that deliver social and environmental benefits. Since 2004, NV China has mentored 40 companies which have since received a combined total of \$70 million in equity and debt financing. <http://www.new-ventures.org/>

WRI has also published the following resources, which are available at www.wri.org:

⇒ **China's Booming Energy Efficiency Industry**

<http://www.wri.org/publication/chinas_booming_energy_efficiency_industry>

⇒ **China's Climate Change Playbook is Worth Reading** by Jonathan Lash, President

<<http://www.wri.org/stories/2008/07/chinas-climate-change-playbook-worth-reading>>

For more information on WRI's work in this area, please contact the following WRI experts:

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9. China Coal Information Institute. 2008.
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12. Per Capita CO₂ Emissions figure taken from "Leveling the Carbon Playing Field," by Houser et al. 2008.