



A view of Shanghai and the Huangpu River.

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NRDC is Leading the Way Towards Climate Solutions for China

For more information, please contact **Barbara Finamore** at bfinamore@nrdc.org (646) 244-8222

China's rapid development has created urgent environmental and energy challenges—but it also presents a unique opportunity to help shape a low-carbon, sustainable development pathway for China that would have significant benefits both for China and the world. For nearly 15 years, the Natural Resources Defense Council (NRDC) has been working to strengthen environmental protection and reduce energy consumption and greenhouse gas (GHG) emissions in China by working with central and local governments, research institutes, environmental groups, and businesses to develop the policies and tools needed to address China's climate and energy challenges.

Helping China to Develop Sustainably While Building Economic Prosperity

With an on-the-ground staff of 25 legal, policy, and technical experts in Beijing recognized for their effectiveness and vision, NRDC is working to promote environmentally and economically sound policies in China through:

- **Expanding Demand Side Management (DSM) Energy Efficiency:** To increase energy efficiency in the industrial sector, NRDC is partnering with provincial governments to develop DSM programs that fund large-scale investments in energy efficiency, and with the central government to design DSM policies and guidelines.
- **Greening the Supply Chain:** Beginning with the textile industry, NRDC's Responsible Sourcing Initiative is working with Chinese factories and multinational companies to find cleaner and more efficient manufacturing processes that reduce the environmental footprint of their operations.
- **Making China's Buildings More Efficient:** NRDC is working to make the construction of energy efficient green buildings and the retrofitting of existing buildings the norm through demonstration projects, stricter building energy codes and equipment standards, and by creating energy rating and labeling systems.



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China Facts

NRDC is Leading the Way Towards Climate Solutions for China

- **Promoting Efficient, Sustainable Cities:** NRDC is promoting smarter and more efficient urban development that prioritizes public transit and efficient land use.
- **Supporting Renewables and Advanced Coal Technology:** NRDC is supporting efforts to increase China's reliance on renewable energy resources and develop carbon capture and sequestration (CCS) technologies.
- **Strengthening Open Information and Governance:** NRDC is advocating for stronger environmental laws, transparency, and environmental governance. These are fundamental elements that will improve the implementation of China's climate policies.
- **Fostering Cooperation on Climate Change:** NRDC is facilitating cooperation and dialogue between the United States and China on climate change.

Expanding Demand Side Management Programs to Scale Up Energy Efficiency in China's Industries

With a rapidly developing economy dominated by manufacturing, industry accounts for roughly two-thirds of China's energy consumption. Improving the efficiency of China's industrial enterprises can therefore significantly lower its greenhouse gas emissions. Because efficiency is also the cheapest, fastest, cleanest, and most reliable energy resource, NRDC is adapting lessons learned through 25 years of experience as the top DSM policy advocate in the United States to help China's cities and provinces develop large-scale demand side management programs to fund investments in energy efficiency. Our goal is to help provinces enact policies that will provide incentives for businesses to improve their efficiency. Together with improvements in end-use energy efficiency, these virtual "efficiency power plants" can satisfy energy demand rather than building conventional power plants.

In 2005, NRDC partnered with the governments of Jiangsu Province and the State of California to establish China's first large-scale provincial DSM program. As a result of this partnership, the Jiangsu DSM program currently provides 100 million renminbi (approximately \$15 million) in annual government incentives for industrial enterprises to improve their energy efficiency. These investments in energy efficiency have already helped to reduce the province's peak load by 580 megawatts, which saves 2 terawatt-hours of electricity and reduces carbon dioxide emissions by 1.8 million tons each year.

The Jiangsu DSM program was recognized by Premier Wen Jiabao as a model for China and by U.S. Secretary of State Hillary Clinton as a model for U.S.-China energy cooperation. We are currently working to expand DSM programs throughout China by:

- providing technical and policy advice to local governments in Beijing, Suzhou, Hebei Province, and elsewhere;
- partnering with the National Development and Reform Commission to conduct training sessions on DSM and energy efficiency;
- conducting energy audits for retrofits in factories to demonstrate how energy efficiency saves both energy and money;
- helping China to develop a national framework for measuring and verifying the energy savings from DSM programs; and
- helping the central government to create policies and guidelines to spread "best practices" for DSM throughout the country.

Greening the Supply Chain

NRDC's Responsible Sourcing Initiative is working with Chinese factories and multinational companies to find cleaner, more efficient manufacturing processes. Begun in 2007, the Responsible Sourcing Initiative has focused initially on greening textile factories, which burn large amounts of coal and use copious amounts of water in the dyeing and washing processes, marking them among the largest sources of pollution in China. NRDC's team of experts conducted in-depth audits of Chinese fabric mills and dye houses to understand their production processes and discovered that by improving production scheduling and dye selection, and by ramping up capture and recycling of water and heat, textile factories could save energy and water and reduce their emissions. These efficiency improvements also save money—a win-win for both business and the environment. NRDC is now cooperating with Chinese provincial officials and multi-national corporations such as Wal-Mart, Gap, Levi, H&M, and Nike to promote best practices and to

encourage policies that reward factories that lower their energy and environmental impact.

Here in the United States, NRDC is also working with clothing designers, retailers, and brands to analyze best environmental practices with regard to fibers, dyes, and customer care to reduce environmental impact at the drawing board—making clothes "clean by design."



NRDC is working with textile manufacturers to improve efficiency and reduce waste.

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The Green Olympic Village in Beijing.

Making China's Buildings More Efficient

Energy consumption from the daily operation of buildings, such as lighting, air conditioning and heating, and appliances, currently accounts for about 25 percent of China's energy consumption. As China's rapid urbanization continues—half of the world's new buildings will be built in China through 2030—China's buildings will become an increasingly significant source of greenhouse gas emissions.

NRDC was the first international environmental organization to promote green buildings in China, helping the central government craft national energy codes for commercial and residential buildings and develop a green building standard. NRDC also works with local governments in cities such as Beijing, Shanghai, Shenzhen, and Chongqing to develop local green building standards and retrofitting programs for government and commercial buildings. Because establishing strict building energy codes is only part of the solution, we are also advising the Shanghai government and the Ministry of Housing and Urban-Rural Development on developing building energy efficiency rating and labeling systems that will help to measure the energy performance of buildings and improve enforcement of building energy codes.

NRDC's green building experts have also provided technical assistance on several flagship green building projects in China, including the Agenda 21 building in Beijing. The building is the first in China to earn LEED (Leadership in Energy and Environmental Design) certification and uses 74 percent less energy and 64 percent less water compared to conventional office buildings. In 2008, we worked with Olympic officials to green the Beijing Olympic Village, a 160-acre complex with 42 buildings that housed athletes during the Olympics and has since been converted into residential apartments. Through more than 20 advanced green technologies, including heating and air-conditioning from solar and geothermal heat pumps and electricity from rooftop wind turbines, the buildings are more than 50 percent more energy-efficient than typical Beijing residential buildings and reduce carbon dioxide emissions by 67,000 tons per year. The Olympic Village was awarded with a LEED-Neighborhood Development Gold certification.

Promoting Efficient, Sustainable Cities

With some 350 million people moving from China's rural areas to its cities in the next two decades, the development choices that China's cities make today will play a significant role in their future energy consumption and emissions, particularly emissions from transportation and buildings. In early 2008, NRDC initiated a new effort to promote smart growth principles in China, which favor pedestrian-friendly neighborhoods that offer a mix of housing and public transportation choices. In collaboration with China's Administrative Center for Agenda 21 and smart-growth experts from China and the United States, we organized smart growth workshops targeting medium and small-sized cities, which comprise the largest part of China's urban population.

We also chose two pilot cities to provide more focused recommendations. As a result, the city of Zunyi in Guizhou Province incorporated several important smart growth principles into its revised master urban plan, including transit-oriented development and special public bus lanes, and the city of Tongling in Anhui Province has proposed better spatial management strategies that emphasize ecological protection and efficient land use. NRDC has also been partnering with the Global Environmental Institute, a Beijing-based NGO, to help strengthen sustainable urban planning training programs at China's Central Party School.

Supporting Renewable Energy and Advanced Coal Technology

China is the world's largest producer and consumer of coal, which accounts for 70 percent of the country's energy consumption. China



A pilot carbon capture facility at the Beijing Gaobeidian coal power plant.

is rapidly developing its renewable and low-carbon energy resources, but even under the most aggressive policy scenario coal will likely continue to provide nearly half of China's energy supply through 2030, and a significant portion thereafter. For this reason, in addition to promoting the development of renewable energy in China, we are also helping to accelerate the development and deployment of technologies such as Carbon Capture and

Sequestration (CCS), which could lead to significant reductions in carbon dioxide emissions from coal combustion while scaling up renewable and other low-carbon energy sources.

Although all of the components of CCS technology—capture, transport, and geologic sequestration—are commercially mature, there is still limited experience in combining these components into large-scale integrated CCS projects. NRDC therefore convened a team of scientists and policy experts from the United States and China to identify near-term opportunities for CCS demonstration projects in China, including relatively low-cost opportunities such as using existing industrial sources of pure carbon dioxide and capturing other sources for enhanced oil and gas recovery. NRDC's efforts are aimed at helping China and other countries with an interest in CCS, including the United States, to take the next steps towards developing the technical and practical expertise and experience needed to attain significant emission reductions through the deployment of CCS technology.

Strengthening Open Information and Governance

Developing a coordinated international effort to reduce GHG emissions requires, among other things, that countries have confidence in each others' capacity to monitor and mitigate their GHG emissions. Reliable emissions data in turn relies on the existence of governance systems that make energy and environmental information transparent and publicly available. In May 2008, the Chinese government took a critical step toward furthering environmental transparency by adopting sweeping pollution information disclosure measures, which for the first time required that governmental bodies at all levels in China make certain pollution information publicly available. NRDC's China Environmental Law Project has partnered with the Institute of Public & Environmental Affairs (IPE) to develop a Pollution Information Transparency Index (PITI). The index carries out a systematic annual assessment of the implementation of these regulations by measuring the transparency of environmental information throughout China.

In creating the index, we evaluated government disclosure of pollution information from 113 Chinese cities and, using the PITI methodology, graded and ranked their level of disclosure on a 100-point scale based on eight sets of criteria, including records of rules and standards violations, results of environmental petition and complaints cases, and disclosures upon request. The results of the first-year assessment show that although there is still much work to be done, many city governments have begun to improve the transparency of their environmental information and are laying the groundwork for further significant improvements in the future. The PITI results indicate that China has already made more progress on environmental transparency than many in the international community are aware of or have officially recognized.

Fostering Cooperation on Climate Change

As the two largest emitters of greenhouse gases in the world, the United States and China are beginning to take significant actions to address their GHG emissions and pave the way towards a low-carbon development model that will create new clean energy industries and jobs while strengthening each country's energy security. Both countries have also recognized the need for closer cooperation on clean energy technology research and development (R&D) and capacity building.

NRDC's policy and technical experts are working to identify and provide recommendations for future U.S.-China collaboration in areas such as industrial energy efficiency, green buildings, equipment efficiency standards, and CCS. From our offices in Beijing and Washington, D.C., we are capitalizing on NRDC's policymaking experience to promote greater mutual understanding in the United States and in China about both countries' climate policies and actions. Our trailblazing efforts will be critical to building trust and paving the way for future efforts to reduce emissions, share data and best practices, and expand the development and deployment of clean technologies.

**For more about NRDC's climate-related work in China visit
china.nrdc.org and greenlaw.org.cn.**

Recent Publications:

Global Solutions to Global Warming: Recommendations for Leaders and Policy Makers in the United States and China, June 2009, available at: <http://www.nrdc.org/international/globalchina.asp>

From Gray to Green: How Energy Efficient Buildings Can Help Make China's Rapid Urbanization Sustainable, October 2009, available at: <http://china.nrdc.org/library/from-gray-to-green>

Identifying Near-Term Opportunities for Carbon Capture and Sequestration (CCS) in China, October 2009, available at: <http://www.nrdc.org/international/chinaccs/default.asp>

Proposals for US-China Cooperation on Energy and Climate Change: Building Energy Rating and Labeling Systems, Carbon Capture and Storage Technology and Energy Efficiency Resource Standards, June 2009, available at: <http://www.greenlaw.org.cn/enblog/wp-content/uploads/2009/07/nrdc-proposals-for-us-china-cooperation-jun-09.pdf>

The China Pollution Information Transparency Index (PITI), 2008 First Annual Assessment Results for 113 Cities: Breaking the Ice on Environmental Open Information, June 2009 press release, available at: http://switchboard.nrdc.org/blogs/awang/the_first_annual_pollution_inf.html