

Greening China

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As it prepares for the 2008 Olympics, China is getting serious about sustainability. For a huge industrial economy, that's a real challenge. Here's a progress report on its efforts.

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China's environmental problems are well known. As a developing economy through the eighties and nineties, racing to catch up, China modernized rapidly, paying little attention to the environment. The issue surfaced in the early nineties. With the 2008 Beijing Olympics and 2010 Shanghai World Expo in the offing, the issue is getting a higher priority. "Both cities recognize that pollution could be a drag on their economies," says Professor Wang Weiqiang, Deputy Director of Tongji University's Institute of Architecture and Urban Space.

Setting a Green Agenda

Chinese Premier Wen Jiabao formerly led the advisory council that helps shape the country's environmental policies. Today, that council is pressing to give the State Environmental Protection Agency (SEPA) greater enforcement power and resources. Although SEPA has 50,000 people on staff, it is estimated that at least a million factories in China are actively harming the environment. To extend its reach, SEPA relies on organizations like Green Han River, which documents river pollution in Hubei province, and the Pan-Pearl River Delta Regional Cooperation and Development Forum, which coordinates environmental efforts in South China—a densely settled region with about a third of China's total population.

China aims to turn cities like Beijing, Shanghai, and Guangzhou into world-class metropolises. Gensler Shanghai's Jun Xia says that the country's leaders increasingly realize that achieving that goal depends on effecting environmental change. "The environment, urban and regional green space, and mass transit—they all contribute." Chinese President Hu Jintao seeks to create a "harmonious society" that balances social and

environmental benefits with China's growth and modernization. If successful, it could be an important model for other countries struggling with the impacts of rapid urbanization.

Cleaning Up the Environment

As an economy that's still largely based on manufacturing, China doesn't have the option of exporting its polluting factories, Professor Wang notes. To begin to reverse the damage, China's government will spend \$175 billion in the next five years on a variety of environmental protection measures. In the same period, it aims to cut major pollutant emissions by 10 percent. By 2020, China expects that 16 percent of its energy supply will come from renewable sources. Projects under way to achieve this include a \$19 million solar research center in Gansu province, a 300-megawatt tidal station near the mouth of the Yalu river, and dozens of small- and large-scale wind farms in rural Inner Mongolia.

Professor Wang points to the rehabilitation of Shanghai's Suzhou Creek, in the city's former industrial zone, as a recent success story in environmental mediation. "In the eighties, the creek was black as oil," he says. A cleanup effort, begun in 1998, has turned it around. "They have boating games again on the river." The project won a National Environmental Prize from SEPA in 2006. As a result of this cleanup, the Suzhou Creek area is now seeing mixed-use redevelopment—including office buildings and cultural facilities. The creek itself will be the centerpiece of a new linear park.

Creating Sustainable Regions

To prepare for their respective worldwide events, Beijing and Shanghai are expanding their subway systems, with scores of stations now in construction. Beijing will double the capacity of its system in time for the 2008 Olympics; for the Expo, Shanghai's will be extended to 400 kilometers, more than three times its current length, by 2010. To reduce particulate pollution on their streets, both cities are rolling out electric-powered buses. "Mass transit is a necessity for Chinese cities," Xia says. "If every family in China owned a car, there would be 400 million cars—the traffic would be horrendous."

Beijing has pledged to make the 2008 games the greenest Olympics in history, with water heated by a 6,000-square-meter solar tube installation and with 20 percent of power generated from wind. Many residential buildings—30 to 60 percent— will be outfitted with green roofs. Both cities also see these events as a unique opportunity to demonstrate new sustainable buildings, methods, and products to the world marketplace.

To make room for new infrastructure and office development, Shanghai is relocating 1.6 million residents from its central core to the periphery. Songjiang, a satellite city to the west, is one of the places where they're moving. Green building techniques are integral to these new communities. Their mixed-use downtowns, university campuses, and cultural districts also make them attractive to urban professionals. Denser than their suburban equivalents in Europe and North America, they can accommodate a range of rapid transit options—from dedicated bus lanes to high-speed commuter trains. They will soon be found around most major cities as China prepares for a massive urban migration from the countryside over the next 20 years. Because this population shift, involving several hundred million people, is likely to be accompanied by strong economic growth, these cities have the unique opportunity to rethink their patterns of regional development.

"Making everyday life efficient and pleasant is the real goal of city planning," Xia says. "When you get that right, everything else falls into place. You have better land use, more frequent and accessible transit, and streets, parks, and open spaces that people enjoy." In the past decade, cities like Shanghai have decentralized their administration of land use, shifting to a more organic and localized process attuned to the needs of each community. With this shift has come a new generation of urban-scale developments with a richer mix of uses. In Qinhuangdao, for example, where China's Great Wall meets the sea, Gensler is planning a 369-acre (153-hectare) project that will integrate office buildings, housing, shopping, and entertainment, with green space interwoven throughout.

Cleaning Up China's Cities

What about China's existing cities? Their environmental problems can range from a lack of such basics as clean drinking water to the pollution and congestion caused by crowded roadways. A recent World Bank survey found that coastal cities like Hangzhou, Qingdao, Suzhou, and Weihai that have attracted outside investment have cleaner air and water and more green space than their inland counterparts. They also have the best track records for achieving pollution reduction targets. This is now changing as the Chinese government invests in inland cities like Chongqing, which developed a monorail system in 2005 to reduce traffic congestion and pollution.

China's Green Prognosis

A reason for optimism that China is heading for a more sustainable future is its growing transparency about environmental issues. Daily updates on local air quality and

criticism of environmental abuse are now featured in the media. More detailed information is provided by groups like the Institute of Public and Environmental Affairs, which documents river pollution on its website, and the Center for Legal Assistance to Pollution Victims, which publicizes violations of China's environmental laws.

Because China's top leadership now includes sustainability pioneers like Wen Jiabao, government policies and funding are converging with a growing public awareness of the issue's importance. "The tipping point will come when everyone equates environmental quality with quality of life," says Professor Wang.

Six new buildings in China have received LEED certification, including a demonstration project developed as part of a program, jointly sponsored by China's Ministry of Science and Technology and the U.S. Department of Energy, to help put building design and construction in China on a sustainable footing. LEED is still out of reach for many developers, so China's Ministry of Construction established its own sustainable building certification program. "It needs refining," says Jin Ruidong, a consultant with the National Resources Defense Council's China Clean Energy Program. "But it has opened the door to green building in China by inducing major developers to take a sustainable approach to their projects, with an eye on certification."

In the next 15 years, cities like Beijing and Shanghai will increase green space by up to 30 percent in older residential areas that are being redeveloped at a higher density. Green housing is a buzzword now, with units in eco-friendly residential towers selling briskly. "Homebuyers here benchmark the entire world," Xia says. "They want to live and work in healthy places, so cities and developers are really starting to pay attention."

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