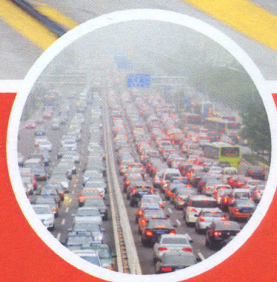
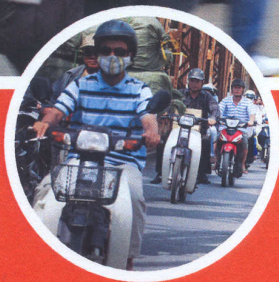
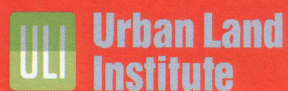


# Tomorrow's City Today



PACIFIC CITIES SUSTAINABILITY INITIATIVE  
INSIGHTS FROM THE 2013 ANNUAL FORUM







KEVIN MO  
THE ENERGY  
FOUNDATION

## Scale Urban Retrofits in China

**CHINA'S RAPID URBANIZATION** is the driving force of its booming economy. In the next two decades, more than 300 million Chinese people will move to cities, ensuring a sustained and robust housing market for years. China's existing building stock amounts to 45 billion square meters, with an additional 2 billion square meters of new construction per year. By 2030, China's urbanization ratio will increase to 70% from the current 50%, and more than 1 billion people will live in cities. Studies show that when a Chinese resident relocates to a city, his or her annual electricity consumption is estimated to at least triple. It is widely believed that energy use in China's building sector will grow to as much as one-third of China's total energy consumption.

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Currently, China's building sector accounts for 20% to 25% of total greenhouse gas emissions. The central government breaks down its Twelfth Five-Year Plan goal of carbon emissions reduction by province and municipality. Coastal cities along the Pacific Rim are more economically developed and their building sectors face bigger demands, for two reasons. First, the highest polluting and energy-consuming industries were moved out of the cities during the period of the Eleventh Five-Year Plan. Second, the service industries continue to grow and dominate the economy. This means that the low-hanging fruit of energy savings in heavy industry is gone, and cities have to address the building sector, which is a harder challenge. For example, in Beijing, the building sector has to shoulder 41% of the



A street in Shanghai (Beggs/Flickr)



greenhouse gas emissions reduction goal in order for the city to achieve the Twelfth Five-Year Plan's carbon reduction goal.

While eco-cities, low-carbon cities, and green cities are hot topics in China, nearly all are about new cities, partially driven by local governments that want to sell more land to raise revenue. A formidable challenge for China lies in making its existing cities more climate friendly, mainly by reducing

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energy use in the building sector. The China Buildings Program of the Energy Foundation wanted to explore a transformation model for urban-scale building retrofits and launched a first-of-its-kind project in Shanghai's Changning District, where the building sector accounts for 80% of energy use, comparable to that of New York City.

We funded a group of local grantees—coordinated by the Changning Low Carbon Management Office—that

crafted a comprehensive plan for energy retrofits of the district's building stock. Gao Yun, deputy chief of the district government and the Energy Foundation's Chinese Dialogue Partner, provided strong political support for the project and recruited Chen Rumei, former director of the Shanghai Energy Conservation Supervision Center, to lead the effort.

The World Bank used the plan to underwrite a \$100 million loan for an urban-scale building retrofit project in Changning, matched by a one-to-one subsidy from local banks (the Shanghai Pudong Development Bank and the Shanghai Bank) and the district government. The project will retrofit more than 100 commercial buildings in five years, resulting in an estimated annual energy savings of 33,000 tons of coal equivalent and a reduction of 170,000 metric tons of carbon dioxide.

This project exemplifies the Energy Foundation's strategic philanthropy. With a focused strategy and targeted project, the foundation leveraged a \$280,000 grant to generate an investment of \$200 million—a ratio of more than 1:700—and helped create a model for urban retrofits that will be replicable in other Chinese cities.

The foundation is now supporting Shanghai to apply the Changning District model to the entire city. In the next few years, all large commercial buildings in Shanghai's 17 districts will be wired to a centralized energy use monitoring platform. With all building performance data collected, analyzed, and benchmarked, the city will be able to systematically target and retrofit inefficient buildings and, eventually, drive down carbon emissions in the building sector.

*Kevin Mo is China Buildings Program Director at The Energy Foundation.*



"Whether related to the global economy, the advancement of society or to the many issues associated with energy and the environment, the manner in which we invest in Asia's cities is of global significance."

*NICHOLAS BROOKE, CHAIRMAN, HARBOURFRONT COMMISSION (HONG KONG); TRUSTEE, ULI*