



SUSTAINABILITY AT SCALE:

MEETING

CHINA'S

URBAN DESIGN

CHALLENGE 蓝图

蓝图

TO MEET A MASSIVE INFLUX OF RURAL RESIDENTS OVER THE NEXT 20 YEARS, CHINA'S CITIES MUST BE LIVABLE AND EFFICIENT. THE MODEL OF CHENGGONG NEW TOWN (RIGHT) PROMISES WORLD-CLASS, SUSTAINABLE AMENITIES.

OUR MISSION

The Energy Foundation's mission is to promote the transition to a sustainable energy future by advancing energy efficiency and renewable energy.

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SUSTAINABILITY AT SCALE: MEETING CHINA'S URBAN DESIGN CHALLENGE

By Jiang Lin, *chairman, China Sustainable Energy Program*; Peter Calthorpe, *principal, Calthorpe Associates*; He Dongquan, *director, China Sustainable Cities Program*; Wang Jiangyan, *executive director, China Sustainable Transportation Center*

Across China, amid the frenetic jackhammers of a construction boom unmatched in human history, there is a race against time. But not just to buy, blast, and build—although that remains a common theme. For increasing numbers of government officials, leading urban planners, and members of the general public, it is a race to reinvent Chinese cities as places that are world-class yet livable and healthy.

This process centers on questions many metropolitan areas around the world wrestle with as they rise from poverty to prosperity: How can the rapid growth of megacities and smaller cities be truly sustainable? What makes a city attractive and efficient?

Yet the decisions being made in Chinese city planning are on a much larger scale than elsewhere, with huge implications for energy consumption and Earth's climate. In the coming year, about 15 million residents of rural China will pack their belongings and move to big cities in search of a better life. This migration is expected to continue at a similar pace for at least the next two decades, as 300 million people—roughly equivalent to the current U.S. population—move from the countryside to urban areas.

Unfortunately, China's existing practices of new urban development are shortsighted. Traditional *hutongs*—narrow alleyways and courtyards that typically created vibrant neighborhood life—are demolished to make way for sprawl, 10-lane expressways

and boulevards, and superblocks of high-rise apartment buildings with little or no shopping or services. Residents find themselves isolated by their superblocks, discouraged from cycling and walking.

Partly as a result of these factors, China has vaulted past the United States in the past decade to become the world's largest car market. In 2011, 18.5 million vehicles were sold in China, compared with 12.8 million in the United States. China's public transit systems and road construction have not kept up with the quick growth in car sales, and traffic congestion is staggering: One traffic jam on the outskirts of Beijing in August 2010 stretched 60 miles and lasted nine days.

Existing development trends also have significant climate impacts, forcing the continued rapid increase in production of cement, iron, steel, glass, and other energy-intensive industrial materials for high-rise apartments, roads, and urban infrastructure. They



NEIGHBORHOODS OF SUPERBLOCKS FORCE PEOPLE INTO THEIR CARS TO COMMUTE OR RUN ERRANDS. (PHOTO: CALTHORPE ASSOCIATES)

宜居
LIVABLE
CITIES

BRT



also increase energy use through heightened demand for household appliances and other consumer goods.

For many Chinese, the main question is less a matter of urban policy or climate impact than quality of life: Does rapid urbanization necessarily mean that cities become dehumanizing places with long, smoggy commutes, or can they be designed to be economically successful *and* livable?

AN EXTRAORDINARY OPPORTUNITY

Every day authorities across China make hundreds of decisions about the course of urban development—mapping a new suburb, laying out a new road, or approving a developer’s proposal for a residential complex. Taken together, what appear to be minor decisions in fact determine the blueprint of China’s cities for decades and perhaps centuries to come.

Increasingly, Chinese leaders at all levels are recognizing that given this blank slate, they can choose to do several things at once: improve mobility, reduce carbon emissions, boost economic activity, improve air quality, preserve arable land, and support a harmonious and prosperous society.

One approach that is gaining traction is the “Planning Cities for People” set of design principles jointly created by the ClimateWorks Foundation, the Institute for Transportation and Development Policy, Calthorpe Associates, and the China Sustainable Energy Program (CSEP). These principles can be applied in almost any urban setting. When put into place, they combine international best practices with the best of China’s urban traditions.

PLANNING CITIES FOR PEOPLE

When applied together, the following principles will help China design and build cities that are livable, prosperous, and efficient:

1. DEVELOP NEIGHBORHOODS THAT PROMOTE WALKING
2. PRIORITIZE BICYCLE NETWORKS
3. CREATE DENSE NETWORKS OF STREETS AND PATHS
4. SUPPORT HIGH-QUALITY TRANSIT
5. ZONE FOR MIXED-USE NEIGHBORHOODS
6. MATCH DENSITY TO TRANSIT CAPACITY
7. CREATE COMPACT REGIONS WITH SHORT COMMUTES
8. INCREASE MOBILITY BY REGULATING PARKING AND ROAD USE



ATTRACTIVE PATHWAYS ENCOURAGE RESIDENTS TO REACH THEIR DESTINATION ON FOOT.

The new design principles involve three primary changes to China's current planning model:

- Identifying the best sites for walkable, transit-rich districts within cities' overall master plans.
- Breaking down the superblocks and wide arterials in these areas with a dense grid of smaller streets that shorten walking distances and make the journey safe, practical, and enjoyable. The design also includes networks of dedicated bicycle lanes and pedestrian paths away from vehicle traffic. This can be seen as a partial reappropriation and improvement of China's traditional *hutongs*, integrating housing, shopping, services, and transit corridors at the micro-local level.
- Coordinating transit stations with mixed-use zoning and density that match their capacity. This entails high-quality public transit with routes that take people where they need to go, and stations located within walking distance of business districts, shopping, and residential areas. Transit service must be frequent, fast, direct, comfortable, and easily accessible.

The bottom line is that sustainable cities focus on people not cars. They incorporate multiple city centers and mixed-use areas so that residents can live, work, shop, and engage in after-work and weekend activities in relatively close proximity, reducing unnecessary travel.

China's new towns and districts must make it easy and desirable to walk and bicycle. Currently, cities are plagued by superblocks and high-speed expressways that form highly effective barriers, forcing people into their private vehicles. In Beijing it is said that a pedestrian has to be an Olympic sprinter to cross a

100-meter-wide boulevard without being caught by a traffic light. All too often, neighborhoods consist of residential developments of 20 or 30 identical towers surrounded by fortress-like walls. There are no commercial outlets or services in these developments, so a trip to the supermarket or any other shopping requires driving.

PUTTING PRINCIPLES TO WORK

Chinese leaders typically want to test new policies in a few localities before implementing them nationwide. With regard to the new principles for urban design, the Chinese government has decided to develop a limited number of pilot cities, which act as field laboratories for the process of writing and adopting policies and regulations all the way through to actual construction. When these projects have demonstrated enough success, the central government may develop the mandatory national standards, guidelines, and incentives that are needed to swiftly scale up urban sustainability throughout China.

► CONTINUED ON PAGE 13

THE BOTTOM LINE IS THAT SUSTAINABLE CITIES FOCUS ON PEOPLE NOT CARS.

低碳

LOW-CARBON

CITIES



实践

CASE STUDY KUNMING



A MODEL FOR CHINA AND THE WORLD

The nation's boldest single step toward sustainable urban design is under construction in the southwest Yunnan province, in a sign of Chinese officials' willingness to break with the old model and start anew.

The tableau is in Chenggong, a satellite city—called a “new town” in China—about 10 miles from the center of Kunming, a city of 7 million residents. A conventional development plan was under way in 2010, when leaders agreed to abandon it in favor of one that will make Chenggong the first Chinese city to incorporate all eight sustainability principles (see page 7).

Kunming's party chief at that time, Qiu He, was an early advocate of sustainable development. He provided the leadership required to change course, and urban designers Calthorpe Associates and CSEP's China Sustainable Transportation Center worked with local officials to design the new town.

The previous plan had echoed the same design template so widely abused nationwide: 400-meter-long superblocks, multi-lane expressways, and neighborhoods devoid of shopping and services. Instead, the new plan features a fine-grained grid of small blocks divided by narrower one-way streets that invite foot traffic. There will be metro connections and bus rapid transit on all major roads and higher density development along these lines, particularly near transit stations. A network of walkways and bicycle paths will connect public spaces.

Land transfers to developers are now under way, and planners expect to break ground in 2012 on 10 parcels that will demonstrate how sustainability concepts can be implemented.

To scale up the Chenggong experience, CSEP and Calthorpe Associates are incorporating a similar design



THE URBAN DESIGN OF CHINA'S NEW TOWNS SHOULD INCLUDE BIKE PATHS, LIKE THIS ONE IN KUNMING.



PETER CALTHORPE PRINCIPAL CALTHORPE ASSOCIATES

“THE FUTURE OF URBAN DEVELOPMENT IN CHINA CAN BE A MODEL FOR THE WORLD IN BUILDING SUSTAINABLE CITIES. URBAN DESIGN THAT IS ORIENTED TO PEOPLE, NOT CARS, IS KEY TO CREATING LOW-CARBON CITIES THAT ARE LIVABLE, HEALTHY, AND PROSPEROUS.”



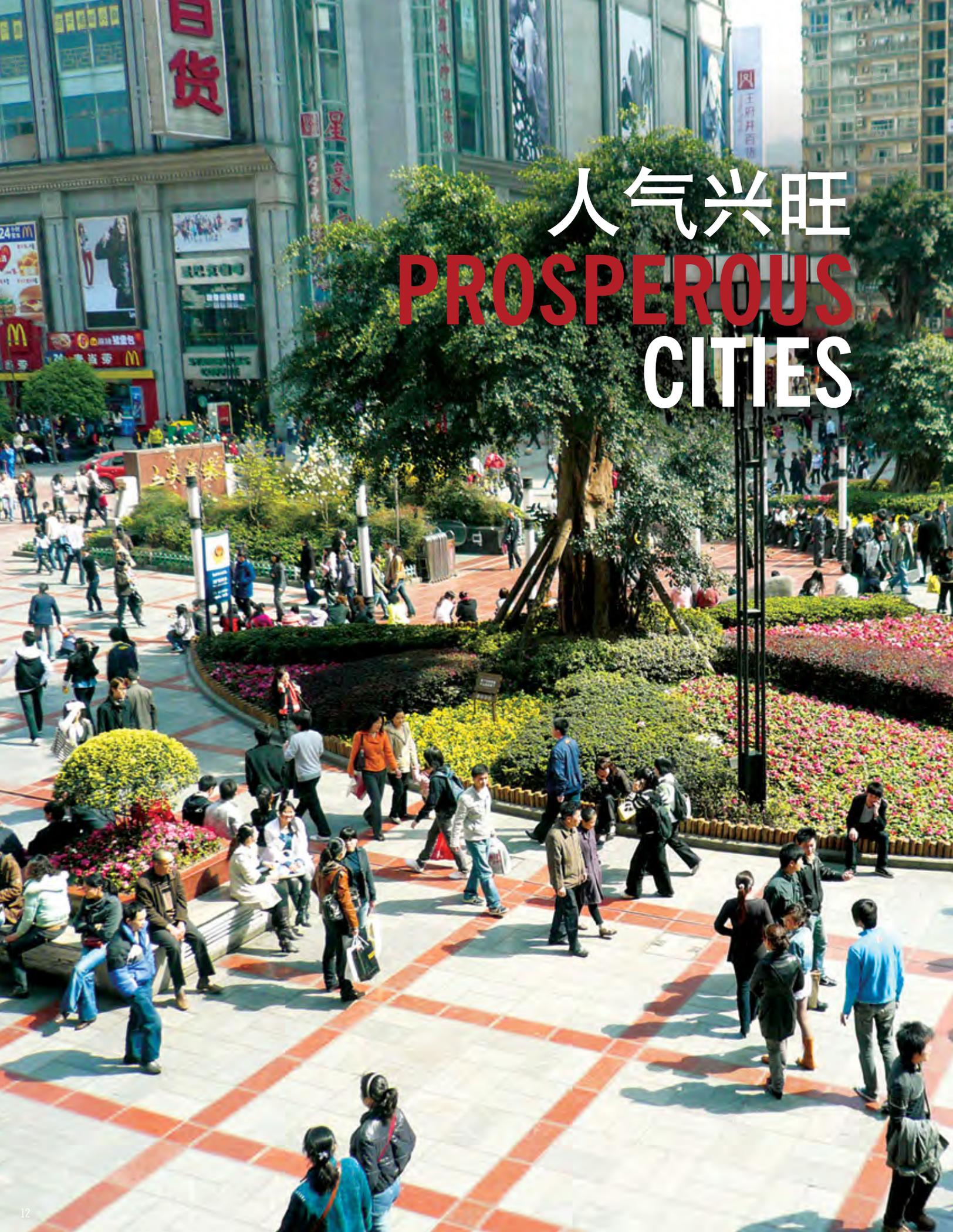
1

2

THE ORIGINAL MASTER PLAN FOR CHENGGONG (FIGURE 1) INCLUDED LONG SUPERBLOCKS THAT CATER TO CARS. THE NEW PLAN (FIGURE 2) INCORPORATES A DENSE NETWORK OF STREETS AND PATHS THAT MAKE IT EASIER, SAFER, AND MORE APPEALING TO TRAVEL BY FOOT OR BICYCLE.

approach into a plan for the entire metropolitan area of Kunming. Training courses will be organized for leaders and urban planners from new town developments so that this model can be replicated elsewhere.

Qiu Baoxing, vice minister of the Ministry of Housing and Urban Development, gave the Kunming project high praise. The project also led China's National Development and Reform Commission to include sustainable urban planning and design concepts—in addition to economic and technological considerations—into its pilot program to promote low-carbon urban development.



人气兴旺
PROSPEROUS
CITIES

Urban design for low-carbon cities is gaining acceptance at the highest levels of government. Qiu Baoxing, vice minister of the Ministry of Housing and Urban Rural Development (MOHURD), asked the CSEP's Sustainable Cities Program to work with his team to incorporate the eight sustainable design principles in China's pilot eco-cities. The National Development and Reform Commission (NDRC) also launched a pilot program to promote sustainable urban design in low-carbon development, with the aim of keeping China's carbon footprint in check despite the fast-growing urban population.

The pilot cities were chosen on the basis of demonstrated interest and support of local leadership, potential national-level policy impact, and capacity for implementation. Two standouts—Kunming and Chongqing—are featured in case studies on pages 10 and 14.

NON-MOTORIZED TRANSIT

China's cities will not be able to accommodate the coming rush of people unless residents are able to walk and bike easily. Non-motorized transportation (NMT) plans are an essential part of the solution.

MOHURD initiated a national NMT pilot project in 2010 to demonstrate best practices. By the end of 2011, six pilot cities—Kunming, Chongqing, Hangzhou, Kunshan, Jinan, and Changshu—completed the first phase, each with unique demonstration sites and local policies.

Hangzhou and Kunming built walking and cycling paths along waterways, attracting residents for exercise and leisure activities. Hangzhou, Chongqing, and Kunshan launched or expanded rental bike systems. Jinan and Changshu transformed existing roads into walkable environments by installing street benches, lights, and map systems and by creating



SCENIC PATHWAYS, SUCH AS THIS ONE IN HANGZHOU, COAX PEOPLE OUT OF THEIR CARS.

pedestrian-friendly intersections. Positive feedback from the public in these cities has inspired 20 others across China to follow suit.

Based on the experiences of these pilot cities, the China Academy of Urban Planning and Design is developing the country's first NMT technical guidelines, which will help guide and evaluate eco-city development at the local level.

BUS RAPID TRANSIT

Bus rapid transit (BRT) has several advantages: It is relatively low cost, convenient and efficient, and it allows systems to be planned, built, and put into operation more quickly than subways and light rails.

China's first complete BRT system was developed in Jinan, comprising a network of six routes connected by transfer stations. The country's largest BRT corridor is in Guangzhou—one of China's largest cities, with a population of 15 million—carrying about 800,000 passengers a day along a 14-mile corridor. Major BRT systems are now in development in at least 20 other large cities.

► CONTINUED ON PAGE 16

突破 CASE STUDY CHONGQING



DESIGNING A NEW TOWN IN WESTERN CHINA

Nicknamed “Shan Cheng,” or “City of Mountains and Hills,” Chongqing is a proving ground for low-carbon urban development in a challenging geographical setting.

With a metropolitan area population of 32 million, Chongqing is the primary focus of China’s strategy to grow the poorer, undeveloped western region of the country. The Ministry of Housing and Urban Development also selected the city as a demonstration site for sustainable urban development. In 2008, the government started the Five Chongqing campaign to make the city safe, healthy, livable, green, and accessible for pedestrians and public transit.

Inspired by Kunming’s early success in designing Chenggong, city leaders in Chongqing launched a sustainable urbanization project in the new urban district of Yuelai.

The previous plan for Yuelai suffered from the old planning mistakes: large single-use areas, pedestrian-unfriendly superblocks, and a disconnect between the planning of transit and local development. The new plan reorganizes the site into walkable, mixed-use transit centers throughout the rolling terrain, at the same time protecting natural hillsides and green space.

CSEP worked with its grantee and local partner, the Chongqing Planning and Design Institute, as well as Calthorpe Associates to carry out detailed design and drawings of Yuelai. As a result of this work, the city built an acclaimed demonstration project: a five-kilometer bus rapid transit corridor and six miles of walkways through extremely hilly terrain.



PUBLIC TRANSIT AND AN ACTIVE STREET LIFE ARE SIGNS OF URBAN PLANNING DESIGNED AROUND PEOPLE. (PHOTO: KARL FJELLSTROM, ITDP-CHINA.ORG)



1



2

THE ORIGINAL CHONGQING MASTER PLAN (FIGURE 1) DISCOURAGED WALKING AND CYCLING. CONSISTENT WITH GLOBAL BEST PRACTICES, THE NEW DESIGN (FIGURE 2) HAS A DENSER GRID OF NARROWER STREETS AND SMALLER BLOCKS THAT PROMOTE CYCLING, WALKING, AND AN ACTIVE STREET LIFE.

URBAN DESIGN PRINCIPLES THAT PROVED SUCCESSFUL IN KUNMING ARE NOW BEING APPLIED IN THE MOUNTAINOUS CITY OF CHONGQING.

In the works is a master plan for transit-oriented development that integrates land use and public transit, and a robust non-motorized transit system that emphasizes walking and bicycling. This master plan encompasses all of Yuelai and its surrounding areas, a total of more than 300 square kilometers.

GREEN BUILDINGS

Green buildings use recycled or recyclable materials; minimize energy use; incorporate renewable energy generation systems; help reduce carbon emissions; and improve indoor air quality, providing enhanced comfort for their occupants. They also enjoy the highest level of interest: Premier Wen Jiabao asked two leading government agencies to draft a National Green Buildings Action Plan that includes a timeline for mandatory compliance.

A rating and certification system is in place—the Green Building Label—based on regulatory and voluntary efforts for increased efficiency in the use of energy, water, materials, and land. Some cities and provinces promote it on a voluntary basis, and about 300 commercial and residential buildings have been certified under China’s green building codes. Pilot cities in this effort are Shanghai, Shenzhen, Tianjin, and Hainan.

THE FUTURE

As China races toward a wealthier society, its government and citizens are seeking greater harmony between development and quality of life. They are balancing several priorities:

- Economic development to create prosperity, equity, and harmony with nature
- Improved air quality and reduced traffic congestion
- Development of affordable housing
- Reduction in the growing cost of imported oil, gas, and coal
- Reduction of the country’s carbon footprint

This balancing act has resulted in a new Chinese formula for innovative, people-centered solutions:



China is beginning to adapt, hybridize, and innovate in the field of urban design, just as it is already doing boldly in many other areas. Its new standards combine international best practices and the country’s own traditions, forming an eclectic mix that is carefully designed for success throughout China.

China’s initial efforts in policy innovation may seem small, but once a successful idea is seeded and tested, the country quickly and authoritatively moves to take the global lead. In sustainable urban development, China may become an example to the world much sooner than expected.

可持续 SUSTAINABLE CITIES



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关于我们 PROGRAMS AND GRANTS

The Energy Foundation awards grants and takes direct initiatives in the electric power, buildings, transportation, and climate sectors in the United States. To help China solve its energy challenge, the foundation administers the China Sustainable Energy Program (CSEP). CSEP supports China's policy efforts in eight sectors: transportation, buildings, industry, electric utilities, renewable energy, low-carbon development paths, environmental management, and sustainable cities. CSEP is geared toward helping Chinese agencies and experts solve energy challenges for themselves, bringing in international expertise when requested.

In the following section, we describe the Energy Foundation's four U.S. programs and eight CSEP programs. For each one, we provide the dollar amount granted in 2011, as well as the number of grants the program made and the number of groups that received funding.

Overall, in 2011 the Energy Foundation made 592 grants to 347 groups, totaling \$76,201,513.

To see a complete and searchable list of our grantees, please visit the foundation's website: www.ef.org/grantees.

More than 300 million people will move into China's cities in the next 20 years. The rush to plan, design, and construct these cities means the country may end up building them more than twice over—a tremendous waste of energy and resources. Worse yet, China's new cities are increasingly mirroring U.S. urban development patterns: sprawl, 10-lane expressways, and mega-blocks.

China's national government and a number of local leaders recognize the recklessness of this development pattern and seek low-carbon urbanization alternatives. We promote urban planning that encourages compact development, mixed-use areas, transit-oriented design, and green transportation systems, all of which lead to significant reductions in carbon emissions. Political pressure to deliver such reductions increases our potential to support reforms in urban planning and establish national models for sustainable development.

The China Sustainable Cities Program works with municipal and national governments to establish pilots and demonstration programs that provide concrete examples of sustainable urban development in China. We draw on these pilots to train local planning and design staff; inform policy development at all levels of government; and provide high-quality training programs for officials, local experts, and students.

The foundation made 23 grants to 19 groups in this program in 2011, totaling \$5,960,000.

CHINA SUSTAINABLE CITIES

23 GRANTS
19 GROUPS
\$5.9 MILLION

CHINA BUILDINGS

33 GRANTS
22 GROUPS
\$3.4 MILLION

The China Buildings Program encourages the construction of energy-efficient buildings and the development of efficient appliances and equipment. We support the development and enforcement of residential and commercial building codes, the acceleration of existing building retrofits, the promotion of green buildings, and the development of appliance efficiency standards and labeling programs.

China adds 2 billion square meters of new buildings every year, putting the country on track to build the equivalent of a second China in the next 20 years—a boom that accounts for about half of the new construction in the entire world. The buildings sector is responsible for between one-quarter and one-third of China's total energy use and is expected to grow as hundreds of millions of rural Chinese move to cities in the coming decades. This growth is also expanding the market for consumer appliances: As average incomes increase, people buy more energy-consuming appliances.

Mandatory national standards for appliances result in more-efficient products. Building codes capture efficiency opportunities during construction and avert lock-in of high-power-consuming structures. The retrofitting of existing buildings improves energy efficiency performance. Finally, green building practices—for example, using recycled or recyclable materials and incorporating renewable and energy-efficient power generation systems—can play a crucial role in advancing the efficiency of China's buildings sector.

The foundation made 33 grants to 22 groups in this program in 2011, totaling \$3,454,080.

The China Industry Program supports policies that increase energy efficiency in energy-intensive industries such as iron and steel, cement, chemical products, and nonferrous metals.

Urbanization, industrialization, and rapid economic growth continue to drive energy demand in China's industrial sectors, which accounted for 73 percent of the country's total energy use in 2011. We support efforts to reduce energy consumption by 20 percent in the 12th Five-Year Plan period (2011–2015).

Our program supports the development and implementation of energy efficiency standards for major industrial equipment and products. We also support the piloting and scale-up of best practices in industrial sectors, such as the Top-10,000 Enterprises Energy Efficiency Program, which at this time includes 17,000 enterprises in industry, transportation, and public institutions. These businesses account for more than 60 percent of total national energy use and 85–90 percent of total industrial energy use.

Our program also works with about 75 Chinese universities and provincial energy conservation centers to build capacity in energy efficiency monitoring and services.

The foundation made 35 grants to 29 groups in this program in 2011, totaling \$4,906,000.

CHINA INDUSTRY

35 GRANTS
29 GROUPS
\$4.9 MILLION

CHINA ELECTRIC UTILITIES

23 GRANTS
21 GROUPS
\$3.6 MILLION

The China Electric Utilities Program seeks to shift the country's power sector away from fossil-fuel-based electricity generation and toward cost-effective energy efficiency and renewables. The power sector is responsible for half of China's coal consumption and is the country's largest emitter of global warming pollution.

Electricity demand is growing at more than 10 percent per year—faster than anywhere else in the world—and, in response, China is fast-tracking the construction of new power generation facilities, approximately 60 percent of which are coal-fired power plants.

The Electric Utilities Program promotes the retirement of old and inefficient coal plants and the development of policies that give priority to cleaner, more efficient power sources. We focus on measures that require utilities to invest in demand-side management, and policies that provide pricing and financial incentives to make it profitable. We support a project to develop energy efficiency power plants—end-use energy efficiency projects that, by decreasing demand, deliver kilowatts and kilowatt-hours in much the same way as a conventional power plant. Finally, we aim to reduce global warming pollution through integrated coal gasification and combined cycle technology with carbon capture and sequestration.

The foundation made 23 grants to 21 groups in this program in 2011, totaling \$3,669,000.

The China Renewable Energy Program supports policies that encourage the large-scale development and use of renewable energy in order to drive down costs and accelerate the commercialization of new technologies.

China's Renewable Energy Law, established in 2005, ignited rapid growth in the industry. In 2011 China maintained its position as the world's largest market for new and cumulative wind power installation. China is also the world's largest solar photovoltaic (PV) manufacturer, supplying about half of the world's solar panels. The country's domestic solar PV market sharply increased in the latter half of 2011 following the announcement of a solar PV feed-in tariff; the boom is expected for years to come. President Hu Jintao's declaration of a 15 percent non-fossil-energy target for 2020 further strengthened investor confidence in the long-term market for renewables in China.

The Renewable Energy Program seeks reductions in the costs of renewable energy development and better grid integration of variable renewable power. We also promote policies that incentivize distributed renewable power generation, accelerate cost reductions for new technologies, and hasten fossil fuel substitution.

The foundation made 17 grants to 15 groups in this program in 2011, totaling \$2,281,000.

CHINA RENEWABLE ENERGY

17 GRANTS
15 GROUPS
\$2.2 MILLION

CHINA LOW-CARBON DEVELOPMENT PATHS

24 GRANTS
22 GROUPS
\$2.8 MILLION

The China Low-Carbon Development Paths (LCDP) Program works with China to define strategic goals that spur stronger sustainable energy policies. We also support the development of regulatory systems to implement low-carbon action plans at the national and local levels.

Concerns over energy security, economic development, and climate change have inspired China to set ambitious carbon emissions reductions targets despite the lack of an international treaty commitment. On November 26, 2009, China announced its first quantitative commitment to the reduction of global warming pollution: to cut carbon dioxide emissions by 40 to 45 percent per unit of gross domestic product below 2005 levels by 2020. Approved in March 2011, China's 12th Five-Year Plan underlines the importance of controlling global warming pollution and promoting the development of a low-carbon economy. This historic act affirms China's political will to mitigate climate change and sets the foundation for strong policies in the long term.

The LCDP Program promotes ambitious, long-term, mandatory national climate targets; the creation and use of market mechanisms to realize those targets; and the development of robust carbon regulatory systems and regional low-carbon action plans with strong enforcement.

The foundation made 24 grants to 22 groups in this program in 2011, totaling \$2,817,500.

The China Environmental Management Program (CEMP) supports national and regional policies that strengthen China's environmental regulatory system, promote climate-friendly air quality management, and address the life cycle environmental impacts of energy from fossil fuels.

China's environmental laws and regulations are by and large weakly designed and poorly enforced, and the government agency responsible for environmental protection is inadequately staffed and lacks authority. Moreover, severe local air pollution and associated public health issues plague the country. Integrated strategies to address air pollution and climate change can achieve greater emissions reductions and public health benefits with limited resources. In addition, local environmental problems caused by the production and use of fossil fuels have not been well addressed. Integrating such environmental externalities will make fossil fuel more expensive, make energy efficiency and renewables more competitive, and lead to a better environment for China.

CEMP supports the development and implementation of environmental laws and regulations. We also support enhanced capacity within China's environmental management authority at the central and local levels. Our grantmaking seeks to improve China's air quality management systems via national policies and local air quality management pilots.

The foundation made 19 grants to 16 groups in this program in 2011, totaling \$1,859,000.

CHINA ENVIRONMENTAL MANAGEMENT

19 GRANTS
16 GROUPS
\$1.8 MILLION

CHINA TRANSPORTATION

25 GRANTS
16 GROUPS
\$2.5 MILLION

The China Transportation Program supports policies to reduce global warming pollution and energy consumption from the transportation sector and to improve air quality by reducing tailpipe pollutants.

China is the world's largest new vehicle market. The country's on-road, rail, aviation, and water transportation account for more than 60 percent of national oil consumption. Oil security and urban air pollution are increasingly serious concerns. However, the auto industry is resistant to shifting toward high efficiency and low emissions. With little political will to establish clear goals and road maps for clean fuel development, progress on fuel desulphurization has been slow. Furthermore, local environmental regulators have neither strong authority nor the capacity to address deteriorating air quality from vehicle emissions.

Our program supports the development of fuel efficiency regulations for all vehicle types in China, stringent standards for new vehicle emissions and clean fuels, more effective implementation and enforcement mechanisms, and the development and commercialization of new energy vehicles and retirement of old vehicles. Finally, we promote the integration of China's road, rail, and other transportation modes and a shift toward more efficient long-distance freight transport.

The foundation made 25 grants to 16 groups to this program in 2011, totaling \$2,520,000.

The U.S. Buildings Program seeks to increase the efficiency of new and existing buildings and appliances.

The buildings sector is responsible for 40 percent of U.S. carbon emissions. To reduce energy use in new buildings, we support increasingly stringent building codes and promote their adoption by states and municipalities. About half of U.S. states have adopted codes that offer significant savings for residential and commercial buildings.

The retrofit of existing buildings offers high potential for energy efficiency and carbon abatement; however, there are few opportunities to regulate retrofits. The Buildings Program strategy supports efforts to create programs that benchmark and publicize the energy consumed by individual buildings, as well as innovative finance mechanisms that encourage retrofits.

Appliance efficiency standards make large carbon and energy reductions possible at a low cost. A recent study showed that the savings from all existing U.S. appliance standards—from the time each went into effect through 2035—will net \$1.1 trillion in cumulative savings and reduce annual carbon emissions in 2035 by 470 million metric tons, about equal to the emissions from 118 coal-fired power plants. Our strategy is to aggressively pursue the adoption of new and updated state and federal standards set to the maximum technical efficiency potential.

The foundation made 50 grants to 39 groups in this program in 2011, totaling \$4,714,696.

U.S. BUILDINGS

50 GRANTS
39 GROUPS
\$4.7 MILLION

U.S. TRANSPORTATION

49 GRANTS
37 GROUPS
\$6.8 MILLION

The transportation sector is responsible for 30 percent of carbon emissions and consumes 70 percent of the oil used in the United States. The U.S. Transportation Program seeks to reduce energy use and global warming pollution through policies that improve vehicle efficiency, promote clean fuels, and stop the expansion of dirty fuels.

New technologies and fuels have the potential to slash transportation oil use, air pollution, and greenhouse gas emissions. Improvements to conventional vehicles—including better engines and transmissions and strong, lightweight materials—can make cars and trucks cleaner while saving drivers money at the pump. Next-generation electric vehicles entering the market could eventually transform the way we drive and the fuels we use. Alternatives to petroleum—such as advanced biofuels, electricity, and hydrogen—have the potential to cut emissions and enhance energy security.

The Transportation Program makes grants that promote innovative state and federal policies to speed commercialization of clean transportation technologies and fuels. We favor performance-based policies—such as fuel economy and greenhouse gas standards for vehicles—that guide markets toward cleaner solutions.

The foundation made 49 grants to 37 groups in this program in 2011, totaling \$6,813,211.

The Climate Program seeks to spur informed debate about national policy that would put a price on carbon. Based on the scientific imperative of avoiding dangerous climate change, our goal is to put global warming pollution on an immediate downward trend and set the U.S. on a trajectory of 80 percent carbon reductions by 2050.

We support work to advance policy solutions at the federal and state levels. Climate change demands a national response, but states have provided the leadership on climate policies to date and will continue to be important policy innovators.

The Climate Program focuses on near-term policy debates and longer-term efforts to broaden support for action. Our strategy is to promote understanding of the diverse ways in which our country will be affected by climate change, particularly the economic and security benefits of moving to a low-carbon economy. Our grantee list includes organizations from a wide range of constituencies—such as business, national security, labor, environmental, and minority groups—as well as leading analysts and communicators from all sides of the political spectrum.

The foundation made 76 grants to 64 groups in this program in 2011, totaling \$8,792,275.

U.S. CLIMATE

76 GRANTS
64 GROUPS
\$8.7 MILLION



U.S. POWER

184 GRANTS
142 GROUPS
\$20.4 MILLION

The U.S. Power Program seeks to increase investments in energy efficiency and renewables and reduce power generation and emissions from conventional coal-fired power plants.

Energy can be saved for less than half the cost of generating the same amount of electricity or supplying natural gas. A long-term policy strategy to address the persistent barriers to energy efficiency can reduce U.S. end-use energy consumption by 25 percent in 2020.

Renewable energy technologies such as wind, geothermal, solar, and biomass have advanced in the past two decades, and policy reforms have created a \$70 billion renewables market. We seek to expand and improve such policies as well as those that will develop the transmission of renewables to population centers while respecting land and wildlife.

U.S. coal-fired plants are responsible for nearly 30 percent of the country's greenhouse gas emissions and other forms of hazardous air and water pollution. To decrease reliance on coal-fired power, we promote stronger federal and state pollution controls, improved utility resource planning and investment models, expanded markets for energy efficiency and clean forms of power generation, and improved energy productivity in manufacturing.

The foundation made 184 grants to 142 groups in this program in 2011, totaling \$20,439,796.

APPLICATION INFORMATION

The Energy Foundation is a public charity that awards grants for projects that meet the foundation's strategic mission.

HOW TO APPLY FOR A GRANT

The foundation's funding priorities are highly specialized. Applicants should carefully review the guidelines on our website. If you are not sure whether your project fits the guidelines, we encourage you to write a brief letter of inquiry describing your project, its purpose, and the amount of funding you are requesting. We will notify you if a full proposal is warranted.

If you are confident that your project fits within our guidelines, we do not require a letter of inquiry. You will find the grants application form and other documents on our website at www.ef.org. Grant applications may be submitted by mail or email.

If your work is in China, please review the application guidelines on the China Sustainable Energy Program website: www.efchina.org.

DEADLINES

We accept proposals on a continuous basis; there are no specific deadlines. However, please keep in mind that it takes approximately four to six weeks to review proposals and inquiries and to provide an initial response.

FINANCIAL STATEMENTS

STATEMENTS OF FINANCIAL POSITION

Years Ended December 31,

ASSETS

	2011	2010
Cash and cash equivalents	\$ 16,954,170	\$ 18,921,478
Contributions receivable, net	11,298,781	16,618,051
Prepaid expenses and other assets	781,396	1,333,200
Property and equipment:		
Office furniture and equipment	1,618,851	1,422,863
Leasehold improvements	3,879,690	3,830,772
	<hr/> 5,498,541	<hr/> 5,253,635
Less accumulated depreciation and amortization	(2,617,208)	(1,943,386)
Property and equipment, net	2,881,333	3,310,249
TOTAL ASSETS	\$ 31,915,680	\$ 40,182,978

LIABILITIES AND NET ASSETS

Liabilities:

Grants payable	\$ 3,366,010	\$ 5,077,161
Accounts payable and accrued expenses	1,226,121	1,112,910
Deferred rent-improvement allowance, net	788,814	910,170
Deferred rent liability	267,305	220,160
TOTAL LIABILITIES	5,648,250	7,320,401

Net assets:

Unrestricted	7,335,937	13,826,912
Temporarily restricted	18,931,493	19,035,665
TOTAL NET ASSETS	26,267,430	32,862,577
TOTAL LIABILITIES AND NET ASSETS	\$ 31,915,680	\$ 40,182,978

This condensed financial information was extracted from the Energy Foundation's audited financial statements, on which an independent public accounting firm expressed an unqualified opinion. To obtain copies of the complete audited statements, please contact the Energy Foundation.

STATEMENTS OF ACTIVITIES AND CHANGES IN NET ASSETS

Years Ended December 31,

2011

2010

CHANGES IN UNRESTRICTED NET ASSETS:

Support and revenues:

Contributions	\$ 80,049,391	\$ 79,263,000
Interest income	27,923	28,358
Net assets released from restrictions	16,535,202	15,921,436

	96,612,516	95,212,794
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Expenses:

Grants	76,201,513	96,565,565
Foundation-initiated projects	16,638,024	20,029,899
General and administrative	10,263,954	9,268,524

	103,103,491	125,863,988
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(Decrease) in unrestricted net assets	(6,490,975)	(30,651,194)
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CHANGES IN TEMPORARILY RESTRICTED NET ASSETS:

Support and revenues:

Contributions	16,431,030	21,813,051
Net assets released from restrictions	(16,535,202)	(15,921,436)

(Decrease) Increase in temporarily restricted net assets	(104,172)	5,891,615
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CHANGE IN NET ASSETS

	(6,595,147)	(24,759,579)
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NET ASSETS, BEGINNING OF YEAR

	32,862,577	57,622,156
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NET ASSETS, END OF YEAR

	\$ 26,267,430	\$ 32,862,577
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STATEMENTS OF CASH FLOWS

Years Ended December 31,

2011

2010

CASH FLOWS FROM OPERATING ACTIVITIES:

Change in net assets	\$ (6,595,147)	\$ (24,759,579)
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Adjustments to reconcile change in net assets to net cash used by operating activities:

Depreciation and amortization	676,524	654,020
Improvement allowance amortization	(121,356)	(121,356)
Allowance for uncollectable accounts	0	(170,000)

Changes in assets and liabilities:

Contributions receivable	5,319,270	(14,413,051)
Prepaid expenses and other assets	551,804	(227,711)
Grants payable	(1,711,151)	(3,706,433)
Accounts payable and accrued expenses	113,211	27,224
Deferred rent liability	47,145	69,296

Net cash (used) provided by operating activities	(1,719,700)	(42,647,590)
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CASH FLOWS FROM INVESTING ACTIVITIES:

Purchases of property and equipment	(247,608)	(161,691)
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NET CHANGE IN CASH AND CASH EQUIVALENTS

	(1,967,308)	(42,809,281)
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CASH AND CASH EQUIVALENTS, beginning of year

	18,921,478	61,730,759
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CASH AND CASH EQUIVALENTS, end of year

	\$ 16,954,170	\$ 18,921,478
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ZHAO Qinghua
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