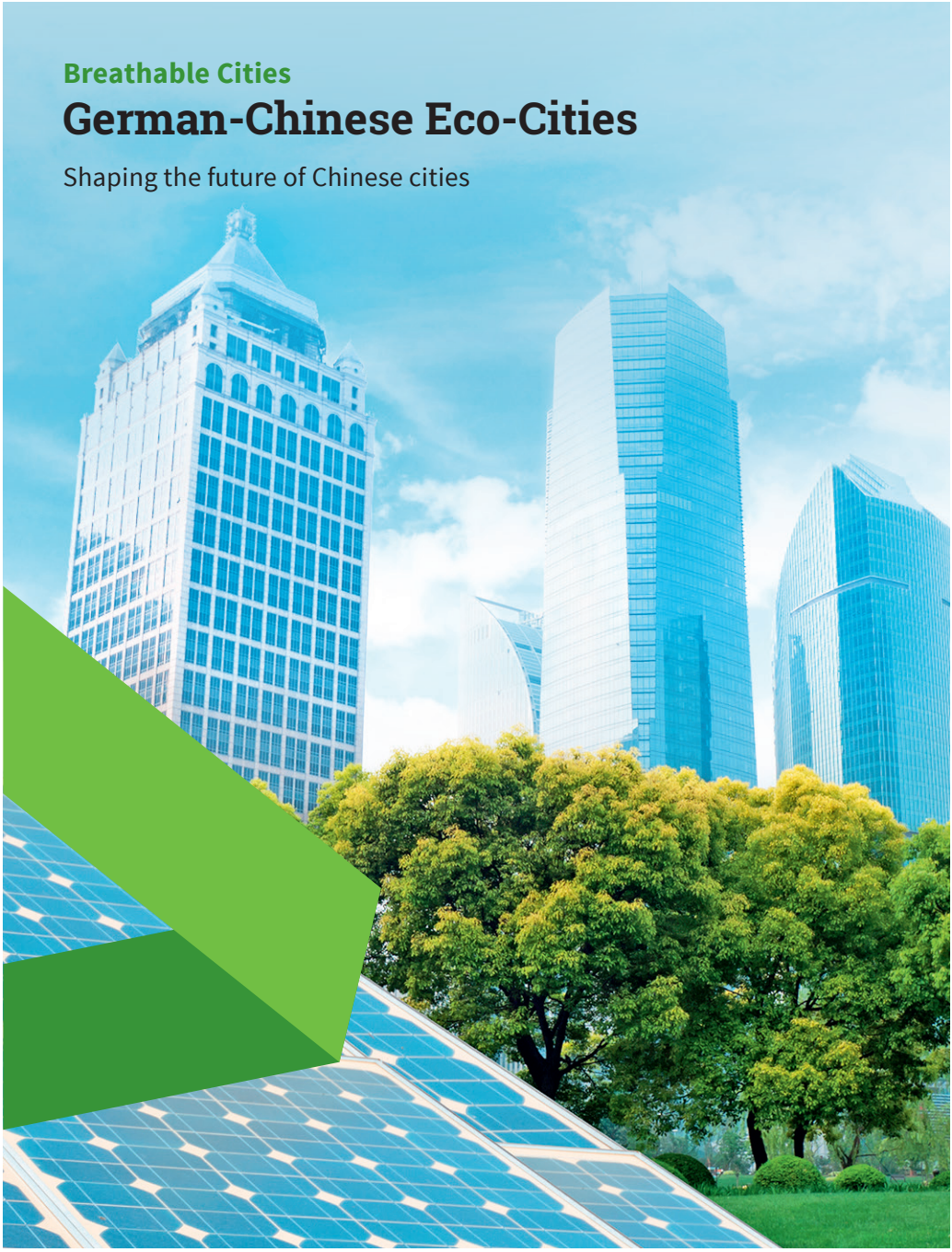
Breathable Cities

German-Chinese Eco-Cities

Shaping the future of Chinese cities



Background

The rapid pace of urbanisation in China poses challenges for city planning and energy supply – with sometimes serious consequences for the environment. China's government is making significant efforts to curb these effects. For instance, it announced on the occasion of the Paris Agreement that the country's CO_2 emissions will begin to fall from 2030 at the latest. In the "Eco-Cities in China" project, China and Germany are jointly seeking to develop clear solutions to achieve these climate protection goals within the "urban energy system".

Implementation of the project is taking place within the framework of the German-Chinese cooperation "Shaping Innovation Together" presented by Premier of the State Council Li Keqiang and German Chancellor Angela Merkel, as well as within the German-Chinese urbanisation partnership between the Ministry of Housing and Urban-Rural Development (MoHURD) and the Federal Environment Ministry (BMU). The project is being overseen by the Chinese Society for Urban Studies (CSUS) and Deutsche Energie-Agentur (dena) – the German Energy Agency.

Potential solutions from Germany are being tested and recommended courses of action for the Chinese building ministry are being developed in currently 25 pilot cities in China, in order to transfer experiences from the project to further Chinese cities.

Fields of action

The building, mobility, energy, water, waste and information and communication technologies (ICT) sectors are the core areas of urban energy systems in which lighthouse projects are being implemented:

Buildings

High-efficiency new builds and refurbishment, building automation systems, the integration of renewable energy sources with multifunctional building elements and prefabricated energy-plus houses etc.

Sustainable mobility

Road management systems, infrastructure for e-mobility and induction charging, tram systems and intelligent street lights etc.

Energy concepts

High-temperature superconductivity, neighbourhood CHP plants, bidirectional combined heating and cooling network, biomass and geothermal energy etc.

Water/waste water

Energy-efficient refurbishment of waterworks, waste water heat recovery, sludge stabilisation and power generation from digester gas etc.

Waste management industry

Waste separation concept, waste recycling systems and fuel production from food waste etc.

Information technologies and innovation

Building management system with interface to energy systems, smart living and smart metering etc.

Know-how transfer across all levels:

- A catalogue of measures will be released to define pilot projects and possible energy optimisation measures in all fields of action at a municipal level.
- An energy concept provides an overview of the energy-efficient optimisation of individual buildings and neighbourhoods as early as the planning phase.
- German companies from the dena competence network for technologies designed to improve efficiency support the projects in technical consulting, quality assurance and the implementation of measures.
- Annual mayoral visits to Germany with on-site tours expand the expertise of decision-makers.

Pilot cities

Twenty-five pilot cities in twelve Chinese provinces have been participating since 2014.

The pilot cities are structuring their activities in the field of energy systems and climate protection by introducing a management system in line with dena's "Energy and Climate Protection Management System" (EKM) at the municipal level. They use this framework to implement innovative projects and hence to become showcases for sustainable urbanisation in the future.

Project objectives

Strengthening the urban and administrative structures for sustainable and green development processes in Chinese cities

Improvement in the framework conditions for investment in efficiency technologies

Transfer of expertise in politics, business and science

Positioning of German products and companies on the Chinese market

Creating structures for energy efficiency
China can benefit from German know-how on eco-friendly technologies in order to make progress in the area of energy efficiency. It is therefore imperative to increase the transfer of know-how. To this end, dena is applying its experience from the Energy and Climate Protection Management System (EKM) that was developed specifically for German municipalities to the eco-cities in China.

Project content

Germany has advanced knowledge in the field of low-CO_2, ecological and sustainable urban development. As part of the master plan for the pilot cities, suitable urban areas will be selected that meet the national low-CO_2 eco-city standards (No. 78 \ [2011] of the Chinese building code).

Collaboration within the field of technology implementation
New technologies are being used and integrated into urban planning processes under the auspices of experts from China and Germany. Here, CSUS and dena are coordinating and implementing urban planning in the following areas: ecological indicator system, green environmental and transport planning, energy-efficient construction, energy concept in the selected neighbourhood, and management system for sustainable urban development (EKM).

Certification: „German-Chinese Eco-Cities“
All pilot cities that complete the plans in accordance with the requirements of the cooperation project and successfully undergo an evaluation by German and Chinese experts will be awarded the “German-Chinese Eco-Cities” certificate by CSUS and dena. The requirements include a minimum reduction of 30 per cent in CO_2 emissions by 2030. Performance results will be presented to the German and Chinese ministries.

Funding the implementation of lighthouse projects in the pilot cities
Based on the results of urban planning in the pilot cities, lighthouse projects that are aligned with the German concept of sustainable development are selected to apply for KfW development loans in China. CECA provides technical advice and support in preparing the applications for development loans and the feasibility studies.

Broadening and strengthening of bilateral dialogue on sustainable urban development
CSUS and dena are organising bilateral dialogue and mutual visits as part of the cooperation project. German experts typically participate in technical events in the pilot cities twice a year, while the fact-finding mission for Chinese decision-makers in the pilot cities will be held once a year.

Cooperation partners

The partners in the German-Chinese urbanisation partnership are the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the Ministry of Housing and Urban-Rural Development of the People's Republic of China (MoHURD). Among others, CSUS and dena are the institutions in charge of organising the cooperation. The China Eco-City Academy (CECA) is the supporting partner for implementation of selected lighthouse projects.

Responsible ministries

Ministry of Housing and Urban-Rural Development (MoHURD)

Sino-German Urbanisation Partnership

Federal Ministry for the Environment, Nature and Nuclear Safety

Performed by

Chinese Society for Urban Studies (CSUS)

dena German Energy Agency

Supported by

China Eco-City Academy (CECA)

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