



### *GIZ Low Carbon Urbanization in China: Approaches and Measures 1993-2015*

## **Supporting China on its Way to Low Carbon Urbanization**

China's economy and wealth are growing rapidly. Its urbanization pace is unparalleled in history. China's achievements are almost beyond comprehension, but so are the strains and problems that were at first ignored or even unavoidable. However, far sighted policy makers and planners realized the increasing predicaments and started to address them already in the 1990s.

GIZ-China has over 20 years cooperation experience in sustainable urbanization, energy efficient buildings and climate friendly technology transfer. The main political partners in China are the Ministry of Housing and Urban-Rural Development (MoHURD) and the National Development and Reform Commission (NDRC) and the Ministry for Environmental Protection, Foreign Cooperation Office (MEP/FECO). On the German side the cooperation was funded by the Federal Ministry for Economic Cooperation and Development (BMZ) and the Ministry for the Environment Nature Protection Buildings and Nuclear Safety (BMUB). BMZ supported public private partnerships are implemented with German private sector enterprises.

### **Project examples implemented with MoHURD include:**

“Sustainable Urban Development Program” (SUDP, 2007-2012) introduced modern approaches to city renewal processes. The project for the first time introduced the concept of city quarter renewals. It is a major impact that this idea became main stream policy in 2015.

“Energy Efficiency in Existing Buildings” (EEEB, 2005-2011) demonstrated the feasibility of comprehensive retrofits of residential buildings according to German standards with Chinese building materials. The results influenced the current Green Building Action Program (2013) of the State Council. It will have a major impact on energy savings and greenhouse gas mitigation and contribute to China's goal to reach the carbon emission peak before 2030.

“Energy Efficiency in Public Buildings” (EPPB, 2011-2015) focused on energy efficient renovations in Chinese schools and hospitals. As a major impact, the partners of this project, the Ministry of Education and the Ministry of Health, developed a Green Building Action Plan for Schools and established new energy efficiency standards for hospitals, respectively.

“Climate Protection through Energy Efficiency in Residential Buildings” (KEEG, 2010-2013) created a market mechanism converting energy savings achieved through renovations into tradable carbon certificates. After the launching of an Emission Trading System (ETS) in China in 2016/17, the results can be used to integrate the residential building sector into the emerging Chinese ETS.

“Qualification of Key Actors in the Building Energy Efficiency Sector” (KABEE, 2013-2016) has been initiated to disseminate German know-how to small and medium Chinese cities. The disseminated information resulted in a higher awareness of pathways to sustainable buildings. As a very noticeable impact, this is leading to requests for further support in the actual implementation of energy efficient projects.

**Project examples implemented with NDRC include:**

“Low Carbon Development in Jiangsu Province” (Jiangsu I, 2010-2015) assisted the Province of Jiangsu to develop and use innovative information to better achieve their energy reduction and greenhouse gas emission reduction targets under the 12<sup>th</sup> Five Year Plan. The promoted studies and German know-how were disseminated through the Jiangsu Information Center into Jiangsu’s cities. As a major impact, several of the studies were used by the Jiangsu Development and Reform Commission in their drafting of Jiangsu’s 13<sup>th</sup> Five Year Plan. This, in turn, was recommended by NDRC as a best example to other provinces.

“Low-carbon compound projects in city networks in Jiangsu Province” (Jiangsu II, 2015-2018), is now promoting a holistic approach to identify, plan and implement integrated and interactive energy concepts in cities and industrial areas. The know-how provided is much needed to reach the even higher targets set by the 13<sup>th</sup> Five Year Plan. The aim is to introduce the concepts and start implementation of low energy or even plus energy buildings and city quarters as well as enterprises and industry parks.

**Project examples implemented with MEP/FECO include:**

“Conversion of Refrigerator Production to ozone- and climate friendly refrigerant gases” (1993-1999), was the first program of the bilateral cooperation with China under the umbrella of the Montreal Protocol for Substances that deplete the Ozone Layer. It started with converting the refrigerator production at the Chinese enterprise Haier to CFC-free and energy efficient refrigerators. As a major impact, the (patent-free) technology was replicated by many enterprises in Asia, Europe and Africa. By 2010, over 400 million of these environmentally friendly refrigerators had been sold in the world market. This resulted in greenhouse gas mitigation of annually over 1’653’000 tons CO<sub>2</sub> equivalent (tCO<sub>2</sub>eq).

“Environmentally friendly production of XPS insulation foam” (2008-2013) transferred state of the art environmentally friendly German foam blowing technology for the manufacture of heat insulation panels for buildings. Implemented in cooperation with the Chinese enterprise Bei Peng, the installed production line avoids direct greenhouse gas emissions of ca. 1’640’000 tCO<sub>2</sub>eq annually. After the successful demonstration, MEP/FECO chose this technology as the main alternative for the conversion of this industry sector. As a direct impact, the Montreal Protocol for the Protection of the Ozone Layer supported China with a grant of USD 40 million for the conversion of other enterprises in this sector.

“Conversion of Room Air Condition production to environmentally friendly refrigerants” (2008-2013) established, in cooperation with the enterprise GREE of Zhu Hai, a production line for room air conditioners using environmentally friendly hydrocarbon gas and elaborated the conditions for a successful market launch. While adapting the room air-conditioners to hydrocarbon technology necessary safety and energy efficiency criteria were applied in line with European standards. This production line will directly eliminate ca. 1’020’000 tCO<sub>2</sub>eq annually. After the successful demonstration, MEP/FECO selected this technology as one alternative for the conversion of this industry sector. As a direct impact, the Montreal Protocol for the Protection of the Ozone Layer supported China with a grant of USD 75 million for the conversion of other enterprises in this sector.

The selected project examples show how German technological know-how and management processes can be successfully adapted to suit the Chinese situation. There is a clear shift of interest on the Chinese side from singular solutions for buildings or technologies to integrated concepts applicable in entire city districts and industry parks or sectors. This is likely to be an important pillar of Sino-German cooperation in the years to come.

For more information see:

**<http://low-carbon-urban-development-germany-china.org>**