

Urban World

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Bringing blue skies back to our cities

How China is tackling the threat of climate change

- India pioneers solar projects in city of Thane
- Why local governments must drive action on global warming
- Can compact planning help the urban poor?

Bringing blue skies back to Urumqi

The City of Urumqi, fast-growing capital of China's Xinjiang Province, has embarked on an ambitious plan to combat air pollution and cut greenhouse gas emissions. These efforts are assisted by the Sino-German research project RECAST Urumqi. Here some of the people* helping bring back the blue skies, **Bernd Franke, Jiarheng Ahati, Ding Xuefeng, Peng Xiaoyan, Christian Hennecke, and Tang Hengzhi** tell their story.



From 2007 to 2034, emissions from heating Urumqi's buildings are expected to fall by 30 per cent

PHOTO © RECAST Urumqi

The City of Urumqi, with a population of 3.1 million, is the capital of the Xinjiang Uyghur Autonomous region and calls itself the central city of Central Asia. It is growing fast and is expected to be home to 4.8 million people by 2020. More than 15 million tonnes of coal were burned in Urumqi annually, half of it for heating in the very cold winters when temperatures plunge well below zero. This raised Urumqi's air pollution above the 60 per cent level, and created health problems costing the city millions of dollars annually.

The energy efficiency master plan

To tackle this, Urumqi adopted an Integrated Heating and Building Energy Efficiency Master Plan in 2010. It included an investment plan to retrofit buildings and make them more energy efficient, boost the efficiency of district heating, and impose higher energy efficiency targets on new buildings.

Between 2007 and 2034, CO₂ emissions for the heating of Urumqi's buildings are expected to decrease by more than 30 per cent even though the total built up area will more than double. The heat will increasingly be supplied by coal power plants with cogeneration and equipped with flue gas scrubbers. Thus, it is hoped that the skies of Urumqi will be blue again within the next decade, offering wonderful winter views of the beautiful Tianshan mountains.

Currently 33 per cent of the heat is lost before it reaches private consumers. In April 2011, the World Bank approved a loan of USD 100 million to redress this.

The aim is to reduce annual heating carbon emissions from the 2007 level of 112 million tonnes to 77 million tonnes by 2034.

The plan calls for an acceleration of the building retrofit programme by 2020. The Sino-German project, RECAST Urumqi, funded by Germany's Federal Department of Education and Research (BMBF) is supporting this effort with two key projects.

The first zero emission building in Urumqi

For the first project, in the south of Urumqi, an agricultural education centre was transformed into the first zero-emission building in the provincial capital. The heat demand in the very cold winters is supplied by solar heating with an innovative seasonal storage. Combined with better insulation and a floor heat-



It is hoped that Urumqi will have blue skies within the next decade

PHOTO © RECAST Urumqi

ing system, it has helped cut heating energy demand by more than 85 per cent.

For this project, the Construction Committee of Urumqi, University of Xinjiang and the Xinjiang New Energy Institute worked with the German partners, IFEU Heidelberg, Culturebridge Architects and the Passive House Institute. The energy certificate for the first zero emission building in Urumqi provides a transparent picture of the improvements and serves as a role model for other projects. Experience gained in this project will help to tailor energy retrofit options to other buildings.

The first "passive" building in Urumqi

RECAST Urumqi is also supporting the construction of the first so-called passive building in Urumqi which is being built by Dacheng Real Estate Co., a major investor in public and private buildings in Urumqi.

A passive building has a comfortable interior climate which can be maintained without active heating and cooling systems. It is heated mainly by sources inside such as lights, appliances and the body temperature of residents, hence it is "passive". Its heating demand is just 13 per cent that of buildings built as per the 2010 standard for new buildings in Urumqi.

The Xingfu Lu project combines a sustainable building design attractive to clients despite higher construction costs. It will demonstrate that a market for energy efficient buildings can be created. The experience gained in this project is of great value to Urumqi and beyond. ■

**The authors form the energy group of RECAST Urumqi, a Sino-German research project supported by the German Federal Ministry of Education and Research, and many Chinese partners. Bernd Franke is from the Heidelberg-based Institute for Energy and Environmental Research; Jiarheng Ahati of the Xinjiang Academy of Environmental Protection Sciences is the project director. Ding Xuefeng and Peng Xiaoyan are from the Urumqi Construction Committee; Christian Hennecke is from Culturebridge Architects, Grünstadt/Beijing; Tang Hengzhi is director of Dacheng Real Estate Co., a major investor in public and private buildings in Urumqi and is the sponsor of the first passive building on the Silk Road.*