



中德能源与能效合作
Energiepartnerschaft
DEUTSCHLAND - CHINA

Towards an Efficient and Green Energy System in Cities

Sino-German Demonstration Project on Energy Efficiency in Cities



Germany and China are advancing climate goals by boosting energy efficiency and renewables, yet local implementation remains challenging. From 2020 to 2024, the Sino-German Demonstration Project on Energy Efficiency in Cities fostered collaboration under the Sino-German Energy Partnership. By engaging diverse stakeholders including private sector, it developed an integrated energy plan and implemented key efficiency measures in Jintan EDZ, Jiangsu Province. This project showcases effective Sino-German cooperation in driving energy transitions and decarbonisation in cities.

Project Info

Duration: 12/2020-12/2024

Political partners:

- The German Federal Ministry for Economic Affairs and Climate Action (BMWK)
- The National Development and Reform Commission of PR China (NDRC)

Implementation partners:

- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
- German Energy Agency (dena)
- China Energy Conservation and Environmental Protection Group- Eco Product Development Research Center (CECEP-EPDRC)

Pilot park: Jintan Economic Development Zone (Jintan EDZ), Jiangsu Province

Project Background

Cities, accounting for about 70% of the greenhouse gas (GHG) emissions worldwide, play an important role for a successful global energy transition. In Germany as well as in China, many cities, urban districts and industrial parks are striving to transform their local energy supply system, aiming for sustainable development by enhancing energy efficiency and leveraging green solutions.

Project Objective

The project aims at advancing municipal climate protection by developing and implementing an integrated energy concept in a pilot industrial park. It further identifies cost-effective, energy efficient and climate friendly measures, and improves market conditions for such technologies and solutions. Furthermore, it fosters Sino-German private sector cooperation and engages German green solutions in the implementation of energy efficiency and decarbonisation measures in urban districts and industrial parks in China.

Project Milestones

Guideline Development

Building on the results of 7 German Community Workshops, the project published the guideline *The Pathway to Climate Neutral Districts*.

2016.12

Political Agreement

BMWK & NDRC agreed on implementing demo projects on energy efficiency in industry & cities.

2021.6



The kick-off event in Jintan

Pilot Launch

Jintan EDZ was designated as a pilot park, followed by a kick-off event in January 2022.

2021.12

2022.4



The Training Sessions in Jintan

Training Modules Development

The project developed 6 training modules on green transition and climate-neutral districts and trained over 900 stakeholders over 7 months.

Outcome Highlights

Methodology Package for Climate Neutral Districts in China

The core of the project was the development of a methodology package by German and Chinese experts to help urban districts and industrial parks to achieve their climate goals. Centered around the overarching roadmap planning and concrete efficiency measures, compensated by enhancing the green competence of stakeholders and mapping digital solutions and tools, the project provided a set of integrated solutions for climate-neutral districts based on German best practices.

Implementation of Selected Energy Efficiency Measures in the Jintan EDZ

Based on the integrated energy concept, the Jintan EDZ and implementation agencies have jointly selected three measures from the proposed actions for implementation.

- Energy efficiency in selected pilot building
- Integrated solution for PV, storage and heating in Sino-German center office buildings
- Micro-grid system by Jintan State Grid

Integrated Energy Concept for Pilot Park in Jintan

A team of German-Chinese experts jointly developed an integrated energy concept to comprehensively guide the project's pilot industrial park, the Jintan EDZ, in its green transition. The concept addressed both energy demand and supply sides, uncovering renewable energy and energy efficiency potential. It also explored measures for various sectors, including sector coupling solutions for the district. It further suggested targeted measures for two pilot areas within the industry park.

Multi-stakeholders Engagement and Integration of Green Solutions

The demonstration project started with stakeholder mapping to engage relevant groups across project phases. Local governments and Jintan EDZ administrators and operators actively participated in both project phases, providing policy support to drive implementation. Private sector stakeholders contributed solutions during design and implementation. External experts and green finance institutes offered technical support to optimise outcomes.



BMWK and German Embassy Visit
Pilot Building



Business Roundtables Jintan EDZ and
Private Sectors

Green Solutions

By engaging various stakeholders, the Jintan EDZ adopted heat pump solution from German provider and BIPV solution from a local provider.

2023.1

Energy Concept

The German and Chinese implementing agencies drafted *The Integrated Energy Concept for Jintan EDZ and Action Plan for Pilot Area*

2023.8

Efficiency Measures

The selected pilot building adopted the German Sustainable Building Council (DGNB) Standard to enhance energy efficiency and promote the concept of green building.

2023.9

2024.8-11



Roadshow in Beijing

Dissemination

A series of roadshow events in Jintan and Beijing showcased best practices from Jintan and facilitated exchanges on decarbonizing industrial parks.

• Energy and Emission Reduction in Local Industrial Park

The integrated energy concept for the Jintan EDZ demonstrates that the industrial park could reduce CO₂ emissions by up to 42% by 2060 compared to a reference scenario from 2021. The results validate that the climate goals of the local industrial park can be achieved through the integrated approach and the implementation of targeted measures. Additionally, the outcomes can support the local government in creating climate neutrality policies and guidelines for the park, driving green transformations within local enterprises. Given the park's industrial clustering, these efforts can also accelerate the broader green transition of different sectors.

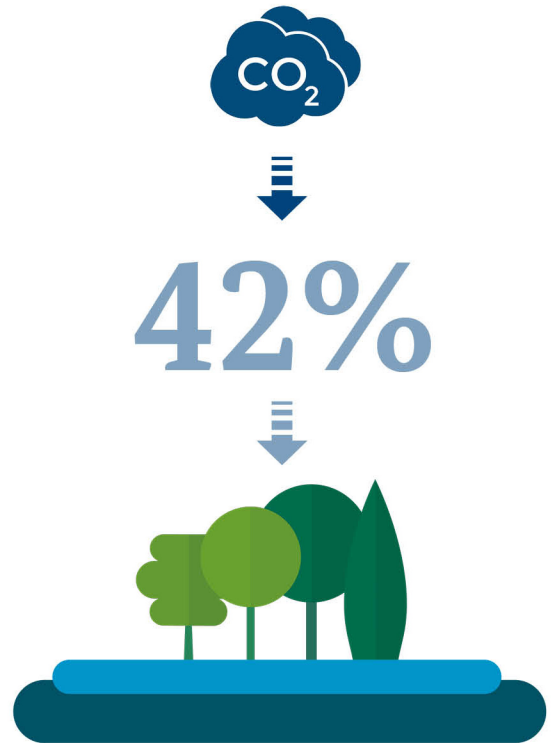
• Scaling Nationwide Decarbonisation through Replication

By disseminating the successful pilot practices in the Jintan EDZ to other cities and industrial parks across China, we aim to multiply the project's impact. This replication approach enables more regions to adopt proven strategies for their effective energy transition and decarbonisation. Additionally, best practices from Jintan, such as the implementation of renewable energy solutions like heat pumps and BIPV are contributing to central government policies designed to support broad decarbonisation across industrial parks and regions. Through these efforts, the project helps create a foundation for China's nationwide transition towards climate neutrality.

The industrial park could reduce CO₂ emissions by

up to 42% by 2060 compared to a reference

scenario from 2021.



• Optimising Market Conditions for Green Solutions by Connecting Business to Government

The demonstration project involved multiple stakeholders in advancing the local green transition. By connecting the private sector with policymakers, the implementation of energy efficiency measures in Jintan EDZ improved market conditions. This was achieved through 1) engaging the German private sector in the demonstration project, fostering cooperation with local state-owned companies and other Chinese private sector entities; and 2) creating opportunities for small and medium-sized companies with low carbon solutions to contribute to the green transition in the pilot park.



Engaging Multi-stakeholders for Green Solutions

By engaging different stakeholders, especially the private sector both from Germany and China, the project identified and applied cost-effective, energy efficient and climate friendly solutions contributing the design and implementation towards an efficient and green energy system in cities.

DGNB Standard Increases Energy Efficiency in Pilot Building



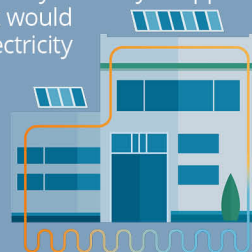
As part of the integrated energy concept, the project team proposed measures to enhance building energy efficiency. A selected pilot building in Jintan EDZ showcases these improvements. Being applicable to different climate zones, while prioritising cost-efficiency

and contribution to decarbonisation, the pilot building adopted the standard by the German Sustainable Building Council (DGNB). Simulation analysis shows that by implementing the standard, the total energy consumption will decrease, while the use of renewable energy will increase.



Heat Pump and BIPV Solutions Expands Renewable Use in Industrial Park

Beyond the demand side, the project also introduced green solutions on the energy supply side by increasing the use of renewables. Based on the analysis of local renewable energy resources, heat pumps provided by a German company and building-integrated photovoltaics (BIPV), supplied by a local company from Jintan, will further enhance the green energy system of the pilot building. Calculations show that the two installed air-sourced heat pumps for heating and cooling will reduce energy consumption by 42 MWh and cut CO₂ emissions by 23.7 t*. The BIPV solution, applied across two floors, will supply 25 MWh of electricity annually. If applied to the whole building, it would provide 283 MWh of electricity annually, reducing 158 t of CO₂ emissions.



**2023 average grid emission factor in China: 0.56 t CO₂/MWh*

The Outlook

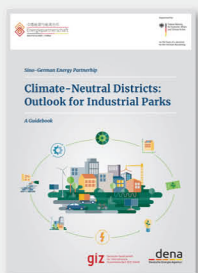
At the 9th Meeting of the Sino-German Working Group on Energy Efficiency in May 2024, both the Chinese and German governments highly commended the achievements of the demonstration project. They expressed their strong interest in disseminating these outcomes as best practices of the Sino-German cooperation in energy efficiency, showcasing the green energy transition to further industrial parks and regions in China and internationally.



About the Sino-German Energy Partnership

The Sino-German Energy Partnership is the official platform for energy policy dialogue between Germany and China on national level. It aims to accelerate the energy transition in the two countries by continuous political, economic, regulatory, and technological exchange with focus on energy efficiency and renewable energies. Furthermore, the Energy Partnership provides a platform for fostering private sector cooperation. On behalf of the Federal Ministry for Economic Affairs and Climate Action (BMWK), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH implements the Sino-German Energy Partnership (EP) and has established offices in Beijing and Berlin serving as an information platform and point of contact for all involved and interested parties. On the Chinese side, the Energy Partnership is chaired by the National Development and Reform Commission (NDRC) and the National Energy Administration (NEA).

Pathway towards Climate Neutrality in Industrial Parks



The Pathway to Climate Neutral Districts



Integrated Energy Efficiency Concept in Jintan (Chinese)



A Series of Publications of the Demonstration Project Energy Efficiency in Cities

Parallel to supporting the pilot industrial park to develop its integrated energy concept, the expert team summarised the experiences and best practice of energy efficiency on district/regional level in China and Germany, illustrating an integrated approach towards climate neutral districts.



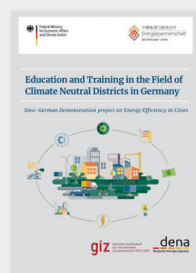
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Video: Best practices of Climate Neutral Districts in Germany



Tool System for the Development of Climate Neutral Districts



Training for Climate Neutral Districts Stakeholders



Imprint

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Energy Partners



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Pilot Park



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