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NETWORK FACILITY

IMPACT SHEET • SWITCH-ASIA PROJECT

LOW ENERGY HOUSING – ENABLE AND ENFORCE ENERGY-EFFICIENT BUILDING CONSTRUCTION

Mainstreaming energy-efficient buildings in Chinese cities through raising minimum energy performance standards

The project achieved 7.45 million m² of energy efficient floor area in three years

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The Challenge

Conventional buildings in China consume large amounts of energy due to a lack of energy efficiency measures. With two billion square metres of mostly minimally efficient floor area added to the building stock every year, buildings require vastly more energy than is necessary. This results in more fuel burned, rising local pollution and GHG emissions, higher utility bills for consumers and reduced national energy security for government. The earlier this issue is addressed the better. Buildings have a lifespan of several decades and each low-efficiency building constructed poses a long-term issue. Government, investors, suppliers and consumers have to act soon to prevent lock-in to excessive energy consumption by buildings for many decades to come.

Objective

The *Low Energy Housing (LEH)* project aimed at increasing the sustainable use of resources in the building sector, especially energy efficiency, while improving the quality of life in the target areas and contributing to the mitigation of climate change. This was achieved by using on-going large-scale construction projects in two target areas with different development histories, Shenzhen and Sichuan province, as case studies for best practice.

TARGET GROUPS

The project involved stakeholders from the entire construction value chain:

- Local building sector authorities in Shenzhen and Sichuan;
- 43 local real estate developers;
- SME suppliers;
- Local consumer associations;
- Local buyers;
- Local financial institutions.

Activities / Strategy

Building Partnerships with All Stakeholders

The strategy was to leverage existing government interest in energy efficiency in buildings to reach out to and build partnerships with key stakeholders in the Chinese construction sector. Several years prior to the project, the Chinese government introduced plans to push energy efficient housing into the mainstream. The project thus connected to stakeholders at a time when government demanded the implementation of new energy efficiency measures in buildings. The project partners signed cooperation agreements with property developers and thus created partnerships that provided researchers with access to SMEs and experts involved in the project.

Establishing Information Channels

With high-level support from the Ministry of Housing and Urban-Rural Development (MoHURD) and involvement of influential real-estate developers, the *LEH* project created a communication channel for the most influential parties to explore opportunities in moving to more efficient housing. The project explored the awareness, knowledge and attitudes of developers, construction companies, sales people, government officials and citizens. Each group was provided with practical input to help overcome the respective barriers they faced.

Knowledge Transfer from the EU to China

Experience in EU member states has shown that multiple actors with conflicting goals complicate the shift to higher energy efficiency. The optimal route is to suggest methods to make energy efficient technologies the standard, thus lowering the price and stimulating significant market demand.

Dissemination Platform

In order to raise the level of education, a pre-condition for energy efficient construction, a portal was developed for building professionals to source educational events and resources.

Maximising Impacts

To maximise impact, the project exerted three types of influence to support the construction of more energy efficient buildings:

- it advised the government to increase the minimum energy performance standards of buildings;
- it arranged for government subsidies for those developers that chose to build energy efficient housing;
- it provided publicity for those who contributed to the realisation and construction of energy efficient housing.

Scaling-up Strategy

Working with Policy Makers

The Chinese central government and especially MoHURD have a strong interest in bringing energy and resource efficient housing into the mainstream. The project advised the government to increase the minimum energy performance standards of buildings.

Establishing Incentives

The private-public partnership implemented in this project involves government subsidies paid out to developers that chose to build energy efficient housing. Beyond minimum energy performance standards (MEPS), this method provides market pull, which may be replicated across China. The low energy housing projects in the target areas are given priority to access subsidies from the national green building development funds, and this activity is embedded in the national Green Building Label Programme, supporting its outreach and reinforcing replication.

Creation of Networks

To scale-up and disseminate knowledge and information on low energy housing, the project set up cross-cutting networks that include local construction bureaux, real estate developers, SME suppliers, financial institutions, consumer associations and residents.

Creating a Market by Addressing Consumers

The project advertised the economic, social and environmental benefits of energy efficient housing to public investors, private developers and individual consumers via the concept of life-cycle costs of houses. Consumers especially were briefed on the benefits of low energy buildings. The project provided possibilities to compare the life-cycle costs of standard buildings with those of low energy buildings. Consumers then built up a deeper understanding of the National Green Building Label, which facilitated buyers identifying low energy buildings. Several outputs were prototypes to be replicated for different parts of China. For example, the green lists and survey report methods may be replicated in virtually every Chinese city.

> ***Energy efficiency in buildings is not just about benefitting from lower utility bills and lowering resource usage. It is about quality of life. Efficient buildings provide for a more comfortable living and working environment. Urban city life in China can be stressful, so peoples' homes need to be a place to retreat and recover. Efficiency helps in making homes quiet, improving air quality, reducing the need for heating and cooling. Energy efficiency has many benefits. People need to learn about those benefits!***

Mr. Malte Beckmann, Wuppertal Institute for Climate, Environment and Energy

Training the trainers in Sichuan

Results

Voluntary Agreements Signed

The voluntary LEH cooperation agreements, signed by government and developers, and tied to financial subsidies through MoHURD, created a channel through which project outputs could be channelled and experiences documented. The project consortium created green lists for building materials, which formed a starting point for MoHURD to take up.

Cooperation with Investors

Memoranda of understanding (MoU) were signed with 43 real-estate developers providing the project consortium with access to data and creating another communications channel, also providing developers with access to Chinese government subsidies.

Good Practice Report

A sector report was prepared, outlining not just good practice examples but also highlighting how the Chinese focused on technical solutions while the Europeans focused on policy frameworks enabling technical solutions to develop.

Handbook and Policy Report

A comprehensive guidebook to energy efficiency in buildings was published and submitted to MoHURD. A policy report was also prepared and submitted to MoHURD for consideration in the creation of the next China's Five Year Plan.

Dissemination

Two brochures were produced, beautifully illustrated and describing energy efficiency in terms of additional benefits. The project also developed a multilingual web 2.0 portal allowing educational providers to market their courses to construction professionals.

Delivering pilot project certificate

The Low Energy Housing project has significantly contributed to the mainstreaming of LEH development in Sichuan Province. Introducing the lessons learnt of successful LEH experience into Chinese national policies regarding LEH development will further widen outreach and the impact of the LEH project.

Ms. Yu Gui,
Deputy Director
Sichuan Provincial Agency of Housing and Urban & Rural Development

Impact in Numbers

Economic Impact

- Achieved monetary saving of CNY 33.6 million (EUR 4.8 million) by reducing CO_2 emissions, based on carbon market of China's emissions trading system (ETS)
- Achieved energy savings worth of CNY 1.5 billion (EUR 0.21 billion)
- Increased the share of sustainable buildings in Sichuan from 4.2% in 2010 to 16.6% in 2014 and in Shenzhen from 22.3% in 2010 to 39.5 % in 2014.
- Created new business opportunities with the number of contracts for SME suppliers supplying green building materials increased by 12.8%, as compared to baseline 2010
- Initiated changes in supply chains with more SMEs suppliers are producing more green products and, in the downstream, consumers willing to buy more green houses

Environmental Impact

- Increased resource efficiency through recycling of construction waste, use of local materials and green building materials
- Reduced the use of toxic materials in construction
- Implemented SCP measures that included engaging consumers, promoting market demand of green buildings, engaging local consumer associations, working with local authorities and engaging SME suppliers

Social Impact

- Benefitted local communities by making more healthy green buildings available at reasonable prices
- Increased the use of local green building materials and technologies

Climate Benefits

- Achieved energy saving of 67 PJ, as compared to the baseline 2010 through construction of 7.45 m2 of energy efficient floor area in three years
- Reduced GHG emissions by 420 000 tonnes
- Increased the use of solar water heaters and geothermal heat pumps in buildings by 16.5%, as compared to baseline 2010
- Promoted cleaner production among SMEs as means to reduce GHG emissions
- The project advertised the economic, social and environmental benefits of energy efficient housing to public investors, private developers and individual consumers via adopting the concept of life cycle costs of houses. Consumers especially were briefed on the benefits of low energy buildings.

Green Finance

- 64 SME investors were engaged in project activities.
- 329 SMEs benefitted from better access to finance, e.g. subsidies provided by MoHURD, and new MoU.
- More than CNY 6.8 billion (EUR 1 billion) green finance leveraged for SMEs
- Initiated interaction between SMEs and investors that increased the green product demand through the inclusion of sustainability criteria into the supply contract
- Developed green loans for building developers

Target group Engagement

- 748 SMEs engaged in project activities
- 42 outreach activities were organised.
- 36 stakeholders, including local consumer associations, local mass media, local communities and local authorities, were involved in the project via technical training, networking, policy dialogues, benchmarking and best practice.

Policy Development

- 34 dialogues with policymakers were conducted.
- Engaged in policy processes engaged such as involving stakeholders in the policy-making process, EU-China exchange in sustainable building policy-making and enforcement, developing methodologies to evaluate policy implementations
- 2 policy recommendations were developed.

Europe-Asia Cooperation

- 3 events organised involving European and Asian participants
- 2 EU-Asia study tours were organised.
- 14 new EU-Asia partnerships were initiated.
- 3 joint workshops and 2 training sessions, 12 joint publications, 3 joint missions to the target regions were organised.
- Promoted knowledge transfer by sharing methodology for assessing environmental impacts of sustainable buildings, EU-China sustainable building best practice, China green building materials labels

Legend

Eligible countries for the SWITCH-Asia Programme

Non-eligible Asian countries for the SWITCH-Asia Programme

Project implementation area

City *Region* *Country*

The boundaries shown on this map do not imply on the part of the European Union any judgment on the legal status of any territory or the endorsement or acceptance of such boundaries.

OBJECTIVES

The project aimed to increase the sustainable use of resources in the building sector, enhance energy efficiency and promote recycling of construction materials, while improving the quality of life in the target areas and contributing to the mitigation of climate change.

DURATION

PROJECT TOTAL BUDGET

EUR 1 488 255
(EU contribution: 80%)

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