



Summary report

SusBuild Forum of Financing Sustainable Buildings

Hosted by:

The Wuppertal Institute for Climate, Environment and Energy

In collaboration with:

China Association of Building Energy Efficiency

Chongqing Association of Building Energy Efficiency

Chongqing Economic Promotional Centre for Building Material Industry

Sino-German Urbanisation Partnership, GIZ

Reported by:

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1. Background

In the last decade, the Chinese government has implemented multiple policies to promote sustainable buildings. Among other incentives, public financing is a major instrument for various actors to improve building energy performance and construct green buildings. However, it is evident that subsidies alone are far from sufficient to mainstream sustainable building refurbishment and development in China. Green financing channels and tools are essential for attracting private investments to fill in the immense financial gaps. At the same time, green financing is becoming a global mainstream theme for both financial institutions and policy makers and has developed rapidly in China. But so far, the building sector has received far less attention than other sectors.

Against this background, on the 15th of November 2018 the Wuppertal Institute hosted in Chongqing (China) the Forum of Financing Sustainable Buildings within the framework of the EU Switch-Asia SusBuild project. The Forum was organized in collaboration with the China Association of Building Energy Efficiency (CABEE), the Sino-German Urbanisation Partnership, and two SusBuild local partners. It gathered in total about 80 participants from the Ministry of Housing and Urban-Rural Development (MoHURD), Chongqing government, stakeholders from the building sector and financial institutions in China as well as European and other international organisations. The participants discussed how green financing can support sustainable building development and refurbishment in China in the future.



Switch-Asia II SusBuild Project

Project Aim and Activities:

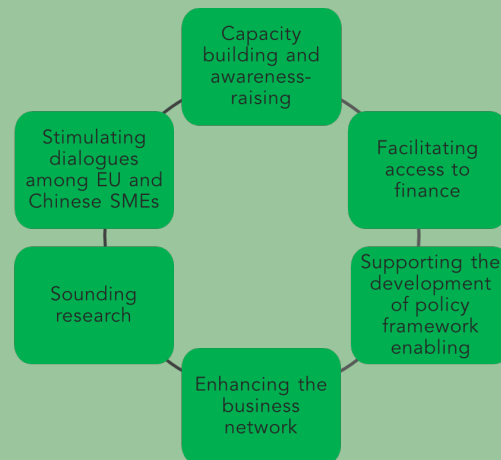
The project aims to foster sustainable building practices among MSMEs in Chongqing City and Yunnan province with replication potential for the western China, in the period of 2016-2019.

Project Partners

- The Wuppertal Institute for Climate, Environment and Energy (WI)
- China Association of Building Energy Efficiency (CABEE)
- Chongqing Association of Building Energy Efficiency (CQBEEA)
- Yunnan Development Centre for Building Technology (YNBTDTC)
- Beijing University of Civil Engineering and Architecture (BUCEA)
- Yunnan Engineering Quality Supervision Management Centre (YNEQS)
- Chongqing Economic Promotional Centre for Building Material Industry (CEPCBM)
- Bank of Chongqing (BOC)

Associated Partners

- Ministry of Housing and Urban & Rural Development (MoHURD)
- Yunnan Provincial Agency of Housing and Urban & Rural Development (YNHURD)
- Chongqing Municipal Agency of Housing and Urban & Rural Development (CQHURD)
- Chongqing Banking Association (CQBA)
- Yunnan Banking Association (YNBA)
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
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2. Agenda

8:30-9:00	Registration	
9:00-10:20	Opening Plenary Moderator: Ms. Chun Xia-Bauer, Project Coordinator of SusBuild	
9:00-9:10	Sustainable buildings in China: latest developments and trends and the financing gap	Mr. Yong Wu, Director, China Association of Building Energy Efficiency
9:10-9:20	Opening Speech	Ms. Lanlan Lin, Director, Building Energy Efficiency Division of Building Energy Efficiency and Technology Department of MoHURD
9:20-9:40	Keynote Speech: Energy retrofitting of public buildings in Chongqing and cost-benefits analysis	Mr. Yong Ding, Professor Chongqing University/Deputy Director, Chongqing Association of Building Energy Efficiency
9:40-10:00	Keynote Speech Green financing and financing indicators for green buildings	Mr. Chenyi Shi, Deputy Director, International Institute of Green Finance, Central University of Finance and Economics
10:00-10:20	Keynote Speech G20 Energy Efficiency Investment Toolkit	Mr. Benoît Lebot, Head of IPEEC Secretariat
10:20-10:40	Coffee break	
10:40-12:20	Session 1: Energy retrofitting and green financing supporting sustainable buildings in China Moderator: Ms. Chun Xia-Bauer, Project Coordinator of SusBuild	
10:40-11:00	Green financing support the development of green buildings	Mr. Jianxun Zhao, Director, Green financing department, Industrial Bank
11:00-11:20	Green financing practice of commercial banks	Mr. Leibo Qin, Manager, Green financing product department, Pudong Development Bank
11:20-11:40	The green financing dream of a small bank	Mr. Xianchao Feng, Director, Business Development Department, Yubei Yinzhen rural bank
11:40-12:00	Energy retrofitting and financing in Changning District, Shanghai	Mr. Yong Chen, Manager, Low carbon department, Shanghai Jincheng HVAC engineering company
12:00-12:20	Energy retrofitting experience and financing in Qingdao	Mr. Jing Huang, Senior Engineer, Qingdao retrofitting office
12:20-13:30	Lunch	
13:30-16:10	Session 2: Supporting financial institutions for financing sustainable buildings and cities Moderator: Ms. Chun Xia-Bauer, Project Coordinator of SusBuild	
13:30-13:50	Unlocking ESCOs' access to finance to boost building energy renovation: the role of facilitators	Mr. Felix Suerkemper, Project Coordinator, The Wuppertal Institute
13:50-14:10	Green Mortgage-backed Securities	Mr. Matthew Ulterino, Coordinator, UNEP FI Property Working Group
14:10-14:30	Evaluation of green assets based on dynamic modelling	Mr. Chen Peng, Director, Green Financing Committee of China Building Energy Efficiency Association
14:30-14:50	Energy consumption monitoring system in Yunnan Province	Mr. Zhengrong Liu, Senior Engineer, Yunnan Development Centre for Building Technology
14:50-15:10	ESCOs for energy retrofitting and	Mr. Mingshun Zhang, Professor, Beijing

	carbon trading	Civil Engineering and Architecture
15:10-15:30	Practice and perspective of green financing innovation promoting green buildings	Mr. Sirui Xiao, Director, Research and Planning Department, Guangzhou carbon emissions trading center
15:30-15:50	Climate risk insurance for cities and buildings	Ms. Handuo Cai, Technical Advisor, GIZ
15:50-16:10	Reflection on how green financing can support sustainable building development	Mr. Wenqing Lu, Director, Green Financing Service, CECEP consulting
16:10-16:20	Final remarks	

3. Energy retrofitting and green financing supporting sustainable buildings in China

Building experts from Chongqing, Shanghai, Qingdao, and Yunnan Province presented energy efficiency retrofitting projects and project financing, their local policy framework, and challenges of accessing financing.

Chongqing City has been designated twice as the national pilot of public and commercial building energy retrofitting. Until 2017, 180 energy retrofitting pilot projects with about 7.5 million m² were implemented. These resulted in annual energy savings of about 389 GWh. Since lighting and HVAC account for 70-80% of electricity consumption in public and commercial buildings, energy saving measures in these two areas were the focus of most projects. The payback time of lighting energy saving projects for public and commercial buildings (except for educational institutions) is rather short, ranging from 1.8 to 5.5 years. Pilots received subsidies from both national and local government. The major financing model for these projects is Energy Performance Contracting (EPC) based on shared-savings, which is typical in China. National subsidies are provided both to ESCOs (80%) and building owners or users authorised by the owners (20%), while local subsidies are offered only to ESCOs. While EPC is expected to continuously be an important financing model for energy efficiency and green retrofitting in Chongqing, energy supply contracting goes beyond retrofitting. This model additionally provides energy management services, offers new opportunities for ESCOs and is regarded as the future trend.

Qingdao was designated as the national pilot of public and commercial building energy retrofitting in 2016. In total, 46 pilots with 4 million m² were implemented and 191 GWh energy savings were achieved. 80% of the projects were based on the EPC financing model. Similar to the Chongqing case, these projects were supported by public awarding scheme. The projects were awarded based on the energy saving verification guideline issued by the local government and a transparent project management procedure including expert review and third party verification. While financing from public awarding scheme accounted for about 45% of the project funding, loans from banks were only about 9%.

In 2012, a building energy retrofitting program has started in the Changning District in Shanghai. Until now, 37 projects with 2.2 million m² have been implemented leading to annual savings of 143 GWh. The program has not only implemented retrofitting measures but has also established a monitoring platform for energy consumption. Similarly, the program used the EPC financing

model. The World Bank offered a loan to support the low carbon transformation of the district including energy retrofitting projects, while two local banks served as implementation agencies. The district government and borrowing companies provided a matching fund. The fund, which was set-up by the local government, provides financing in form of subsidies. The energy retrofitting projects have been supported by bank loans, subsidies, forfeiting based on future receivables, and own resources of the implementation companies. However, the loan was not very attractive since the two local implementing banks added profit margins to the low interest rate provided by the World Bank.

Domestic banks, such as the Industrial Bank, Pudong Development Bank, and local banks in Chongqing, presented their current practices of green financing related to sustainable buildings. They have developed different financing products to support sustainable buildings, especially, green buildings, energy retrofitting, and manufacturing of sustainable building materials. For example, the green finance balance of the Industrial Bank amounted to RMB 800 billion, of which RMB 42 billion were for sustainable building development. In addition, local commercial banks such as Yubei Yinzhen Rural Bank are focusing their service on MSMEs to support them to implement sustainable practices. Financing products of domestic banks range from green loans, green bonds, asset-based bonds and leasing to forfeiting. These products have supported green buildings with two stars or above, social houses built according to green building standards, ultra-low energy buildings, renewable building integration, prefabricated buildings, and green Eco-City projects.

Despite the efforts from both the building sector and the financing sector, the following challenges remain that impede a mainstreaming of these financial products:

- Local development of building energy retrofitting market is not yet mature;
- The value of green buildings has not been fully recognized yet by the market, which results in a low motivation of banks to set up separate loans for green buildings and low incentives for buyers to purchase green buildings;
- There is a lack of standardized procedures for financing green building projects;
- Local banks have limited capacity to evaluate energy efficiency projects and thus the approval process is often delayed;
- Sanction mechanisms are missing in case the borrowers cannot fulfil green building standards;
- There is a general lack of monitoring and verification of energy and water savings, and emission reductions achieved during the operation phase;
- There is a lack of mechanisms that address the challenge of high transaction costs of small scale projects;
- ESCOs have limited assets, weak balance sheets and lack of financial track records;
- There is maturity mismatch between an inadequate supply of long-term funding and the demand for funding long-term projects.

4. Supporting financial institutions for financing sustainable buildings and cities

Experts from national and international organisations including G20 IPEEC, UNEP FI, the Wuppertal Institute, Guangzhou Carbon Emissions Trading Centre, CECEP Consulting, and CABEE presented innovative instruments and good-practice cases supporting financial institutions in financing sustainable buildings:

- Responding to the lack of information about energy saving benefits, Dr. Chen Peng from CABEE introduced green asset evaluation based on dynamic data, ICT, and big data. Building operation, such as green and energy saving benefits, asset operation, user behavior and indoor environment, have to be monitored and evaluated. This enables certified green buildings to be operated in a sustainable way, which brings building owners a stable income from building operation and increases the value of the properties. This reduces the default risk for banks, enables credit approval and improves financing conditions. Besides, building experts from Shanghai, Guangzhou, Yunnan and Chongqing presented local platforms for monitoring the energy consumption of large public and commercial buildings. Transparency of energy consumption and the benefits of energy efficient and green buildings supported by monitoring and evaluation are powerful drivers for investment in energy efficiency and green buildings.
- Capital markets can play a critical role in providing low-interest loans for sustainable buildings. Securitization can be a promising means to enable energy renovation projects to access the capital market.

Mr. Matthew Ulterino from UNEP Finance Initiative presented examples of green mortgage securitization and important challenges for its market development. Examples range from the Fannie Mae Green Mortgage Backed Securities and Natixis Commercial Mortgage Backed Securities in US to the Obvion 'green' STORM covered bond and Energy Efficient Mortgages Initiative in Europe. Current main challenges for securitizing sustainable building projects include what "green" performance standards should be used, the capacity of multiple value chain participants to assess data and control data quality, the enforceability of loan covenants, the difficulty in isolating the 'green variable', and the difficulty to leverage post-securitization to influence owner decisions on green performance.

Prof. Yichen Shi from the Central University of Finance and Economics introduced the green equity index, an innovative financial instrument to guide investors to take into account the environmental dimension in their investment strategy. Green bonds have developed rapidly in the last years in China and can address, for example, the maturity mismatch challenges of financing sustainable building projects. While bonds related to sustainable buildings account for 34% in the issuance of green bonds globally, its share is rather low in China. Mr. Zhongqing Lu from CECEP Consulting claimed that, given the huge investment needs of sustainable buildings in China, the potential of green bonds is largely untapped. On the other hand, it was observed that real estate companies increasingly pay attention to the potential of green bonds to support green building development. For example, in 2016, a Beijing-based real estate, Modern Land, issued the first Mainland China's green bond raising \$350 million. More recently, the Chinese government issued a policy for supporting securitization in the real estate sector, which opens an opportunity for securitizing sustainable properties.

Furthermore, both Prof. Mingshun Zhang from Beijing University of Civil Engineering and Architecture and Mr. Sirui Xiao from Guangzhou Carbon Emissions Trading Center drew attention to the potential of carbon trading for financing sustainable buildings. However, Monitoring-Reporting-Verification (MRV) of emission reduction resulting from sustainable building projects are regarded as a major challenge.

- Mr. Felix Suerkemper from the Wuppertal Institute for Climate, Environment and Energy emphasized the role of facilitators between ESCOs, building owners and financial institutions. Such intermediary organizations can provide a range of services including quality assurance, verification and certification of ESCOs or their services to support green bond issuers, financial advice to ESCOs and their clients, and aggregation of projects. These services are offered to reduce transaction costs of contracting projects and diversify risks for financiers and ESCOs. The presented instruments, financing products and good-practice cases will be part of the SusBuild Handbook “Unlocking ESCOs’ access to finance to boost building energy renovation”, which will be published in the beginning of 2019.
- Mr. Benoît Lebot from IPEEC presented the G20 Energy Efficiency Investment Toolkit, which is based on the following principles: Energy Efficiency First; consider supply & demand side energy investments; stimulate demand for energy efficiency investments; enhance supply of finance; build specific capacities. The Toolkit offers recommendations for different stakeholder groups to enhance capital flows for energy efficiency investments.
- On top of energy efficient and green buildings, sustainable building development shall also take into account the climate risk, given the increasing and unavoidable climate change impacts. Ms. Handuo Cai from GIZ introduced a climate risk management tool for financiers.

5. Final remarks

The consensus of the SusBuild Financing Forum is that financing for sustainable building development is still at an early stage in China. Its scaling-up is of vital importance and will require paradigm changes of different stakeholders as well as an effective combination of policies and innovative mechanisms including not only financing products but also more information on energy efficiency investment performance. The Forum was first of its kind in Western China and brought various key actors from the building sector and the financial sector into dialogue and thus paved the foundation for further collaboration in the future.