Enabling SME access to finance for sustainable consumption and production in Asia

An overview of finance trends and barriers in China

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TOWARDS SUSTAINABLE CONSUMPTION AND PRODUCTION

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Disclaimer: *This report was undertaken based on the engagement of SWITCH-Asia to determine the processes, products, and best practice of financing institutions in China on green initiatives that support climate change mitigation, as well as identifying barriers and risks. Based on insights from the case studies, research, survey and interviews conducted, recommendations are also included.*

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List of abbreviations

ADB	Asian Development Bank
AfD	Agence française de Développement
BOB	Bank of Beijing
CBRC	China Banking Regulatory Commission
CDM	Clean Development Mechanism Fund
CGS	Credit Guarantee System
CHEEF	China Energy Efficiency Financing Project
CHUEE	China Utility-based Energy Efficiency Finance Programme
CIB	China Industrial Bank
CIT	Corporate Income Tax
CNY	Chinese Yuan Renminbi
CSRC	China Securities Regulation Commission
DEG	Deutsche Investitions- und Entwicklungsgesellschaft (KfW)
EIB	European Investment Bank
EMC	Energy Management Contracting
EMCA	Energy Management Company Association
EPC	Engineering, procurement and construction
FYP	Five Year Plan
GDP	Gross Domestic Product
Innofund	Innovation Fund for Small Technology-based Firms
IPO	Initial Public Offering
MSEs	Micro- and small-sized enterprises
MSMEs	Micro-, small-, and medium-sized enterprises
NDTL	Non-Deposit Taking Lender
NDRC	National Development and Reform Commission
NEEQ	National Equities Exchange and Quotation
NSSTS	National SME Share Transfer System
OECD	Organisation for Economic Co-operation and Development
OTC	Over-the-counter
P2P	Peer-to-peer lending
PBoC	People's Bank of China
SDCL	Sustainable Development Capital LLP
SMEs	Small- and medium-sized enterprises
SOE	State-owned enterprises
SPDB	Shanghai Pudong Development Bank
SZSE	Shenzhen Stock Exchange
tce	tonnes coal equivalent
VAT	Value-added tax

Executive Summary

In China, the need to improve access to finance for small- and medium-sized enterprises (SMEs) and to increase sustainable consumption and production (SCP) practices as well as green growth has been recognised by the government and, to some extent, by financial institutions. This study sheds light on opportunities for SMEs to obtain funding for green investments to improve their environmental performance. The study also identifies barriers that hamper access to (green) finance for SMEs. The main results of the study can be summarised as follows:

- China is looking for ways to maintain stable economic growth while at the same time reducing energy consumption and the pressure on the environment. For achieving this goal, the development of the SME sector and the promotion of green investments are strategic goals of the Chinese Government. Access to finance is an important success factor for reaching these targets.
- At the moment, a large share of SMEs uses internal resources for financing their day-to-day business operations. This is due to the fact that many SMEs do not have access to formal sources of funding – challenges are greatest for micro- and small-sized enterprises (MSEs). A major hurdle is posed by banks' high collateral requirements that result from the riskiness of SME (green) business. A lack of implementation and monitoring capacity leads to the effect that SME and green lending guidelines for financial institutions are not strictly followed. Overall, investors prefer large state-owned enterprises working with more established technologies.
- Within the formal banking sector, most important providers of working capital and investment finance for SMEs have been small- and medium-sized city commercial banks. Recent efforts by the Chinese Government to improve SMEs' access to finance have led to large state-owned commercial banks, policy banks and joint-stock commercial banks increasing their SME lending activities.
- The definition of SMEs in China is relatively wide – compared to international standards, Chinese SMEs are rather large. As a result, a considerable share of the funding for SMEs actually goes to large enterprises while smaller enterprises still remain unserved. During the interviews conducted for this study, it was found out that this situation is not expected to change significantly in the coming years, as policy-makers and banks hope to achieve their green (credit) targets primarily through the transformation of large polluting enterprises and the implementation of large-scale renewable energy projects.
- Particularly joint stock commercial banks have become known for being pioneers in green lending in China. Through the introduction of innovative finance products, such as energy performance contracts and carbon quota pledge-based loans, several joint-stock commercial banks have created opportunities for SMEs to obtain funding for their green projects. Even though state commercial and policy banks invest great sums in green sectors and pollution abatement, these financial resources are mostly earmarked for large enterprises and infrastructure projects.
- The capital market is slowly developing as a source of funding for SMEs. Yet, the share of SME financing remains very small compared to overall financial transactions taking place at capital markets.
- If SMEs cannot access funding from conventional financing banks, for example due to a lack of collaterals, they turn to non-deposit taking lenders and informal sources of finance. In this sector particularly micro-credit companies and pawn shops have seen strong growth in recent years. Additionally, new sources of financing have been developed and are on the rise. These include P2P (peer-to-peer) lending and crowd-funding platforms.
- The financing of green projects in the SME sector is not yet a priority for financial institutions in China. Generally, funding for SMEs will be more easily available if they operate in one of the seven priority strategic emerging industries as these receive most funding. Within the various green sectors, energy-related topics are currently of highest priority to the government and financial institutions. Compared to energy efficiency and renewable energies, other fields such as water, air, and waste remain under-represented.

Introduction

Micro-, small- and medium-sized enterprises (SMEs)[1] are vital players in most Asian economies. In China, the number of SMEs has grown steadily since the beginning of the economic opening reform policies in 1978 (IFC and KfW 2008). China applies a broad definition of SMEs, including micro, small and medium-sized enterprises. Classification is based on sales numbers, assets and number of employees, but differs for the various industry branches (see table 1). For example, a company in the wholesale sector is labelled "medium" when it has fewer than 200 employees, while in the manufacturing sector medium enterprises can have up to 2,000 staff (OECD 2015).

Estimates on the total number of SMEs in China vary widely according to the source consulted. While the latest national economic census counted around 7 million registered enterprises with fewer than 300 employees in 2008 (China Economic Census Yearbook 2008, cited from OECD 2015), Shi (2014) refers to 56 million SMEs in 2013, including roughly 12 million SMEs and 44 million businesses run by individuals. This gap is probably occasioned by the different criteria applied – for instance, many Chinese SMEs operate without being formally registered. Despite these variations, sources agree on the fact that SMEs greatly matter for China's rapid growth and economic success. According to the Chinese Association for Small and Medium Enterprises (CASME), SMEs contribute to almost 60% of GDP in China, 50% of tax revenues, 68% of exports and 75% of new jobs every year (CASME, cited from Ministry of Commerce 2012). Overall, SMEs make up around 97% of all firms (OECD 2015).

Besides their economic relevance, Chinese SMEs and their operations also have a significant impact on the environment and society. Currently, the majority of SMEs operates without taking environmental and social side-effects of their production activities into consideration – sustainable production and consumption (SCP) is not an issue that has made its way to the mainstream of business management. Many industrial parks have set up wastewater treatment facilities, but other environmental concerns, such as air pollution and greenhouse gas emissions, remain problematic because they require individual action. Emissions to air, water and soil do not only negatively affect the environment but also harm the people living in proximity to the emission sources. External costs of air pollution alone are estimated to range from EUR 94 billion to 283 billion annually (World Bank et al 2014). These costs, in turn, negatively affect SMEs as resources grow more expensive, government regulations become stricter and employees fall sick. To address these issues, the environmental protection law was amended in 2014 and now requires greater punishment for environmental pollution (The Guardian 2014).

1 In this study, the abbreviation «SME» will generally include micro enterprises, unless further specifications are made.

Table 1: SME definition according to sector (OECD 2015)

	Number of employees			Operating income (in CNY)		
	Medium	Small	Micro	Medium	Small	Micro
Farming, Fishing, Forestry	--	--	--	≤20m	<5m	<500k
Manufacturing	<1,000	<300	<20	≤400m	<20m	<3m
Construction	--	--	--	≤800m	<60m	<50m
Wholesale	<200	<20	<5	≤400m	<50m	<10m
Retail	<300	<50	<10	≤200m	<5m	<1m
Transportation	<1,000	<300	<20	≤300m	<30m	<2m
Warehousing	<200	<100	<20	≤300m	<10m	<1m
Postal Services	<1,000	<100	<20	≤300m	<10m	<1m
Hotels, catering	<300	<100	<10	≤100m	<20m	<1m
Telecommunications	<2,000	<100	<10	≤1b	<10m	<1m
Software and IT	<300	<100	<10	≤100m	<10m	<500k
Real Estate Development	--	--	--	≤2b	<10m	<1m
Property Management	<1,000	<300	<100	≤50m	<10m	<5m
Leasing and Business Services	<300	<100	<10	≤1.2b	<80m	<1m

With their profits and day-to-day business threatened, the number of SMEs searching for ways to improve their environmental performance is slowly increasing. Simultaneously, many companies working in emerging green sectors are SMEs. For example, in 2012, 70% of enterprises in China's energy-saving services were small or medium-sized (Qi 2013). Green industries, especially in connection to energy-efficiency, renewables energies and environmental technology, are expected to become important growth motors for the Chinese economy in the future. This development goes hand in hand with the globally increasing attention for SCP, a concept to reduce negative economic, environmental and social impacts of economic activities. It can be defined as "a holistic approach to minimising the negative environmental impacts from consumption and production systems while promoting quality of life for all" (UNEP 2012). SCP has been included as Goal No. 12 of the United Nations' Sustainable Development Goals (SDGs) which states "Ensure sustainable consumption and production patterns" (UN 2015).

In this study it is examined which funding sources are available for SMEs in China to finance a shift towards more sustainable consumption and production patterns. How the term "green finance" is used in this study is explained in the box below.

In order to shift towards SCP, more and more enterprises will require funding. In general, SMEs require small amounts of financing for investments for a comparatively short term (KPMG 2013, Boao Review et al. 2013). Yet, SMEs have enormous difficulties meeting these financing needs. A survey by the Chinese Development Research Center (2013) showed that only around 33% of SMEs have access to bank loans (cited from China Economic Review 2014). Among 400,000 SMEs in Shanghai, for example, not more than 37,000 have obtained loans from local banks (Shen et al. 2012). Within the SME category, especially the micro- and small-sized enterprises lack access to formal finance – this also holds true for green SMEs. Overall, a large amount of Chinese SMEs currently rely on informal lending, such as family, friends, and illegal credit entities.

In China, the need to increase finance for SMEs and SCP practices as well as green investments has been recognised by the government and, to some extent, by financial institutions. In the following chapters, the financing landscape will be analysed in more detail regarding opportunities as well as challenges for SMEs to access finance in general and green finance in particular.

Green Finance, SMEs and SCP

In the context of this study, the term "green finance" will be used to link the three focal topics of the study series: SMEs, SCP and access to finance. Aspects of SCP most relevant for SMEs are the reduction of energy and material intensity of goods and services production; the reduction of waste and emissions from raw material extraction, production, consumption, and disposal; and the application of life-cycle thinking in all stages of product life (UNEP 2012). Green finance is thus defined as all capital from public and private source enabling SMEs to achieve or contribute to these SCP goals.

Green finance from the financial institutions' perspectives usually comprises financial products and services to promote environmentally responsible investments and stimulate low-carbon technologies, projects, industries and businesses. For green finance products, financial institutions usually consider environmental factors in the internal processing of the transaction, e.g. in the loan sanctioning, monitoring or risk assessment (PWC 2013). Green finance covers not only investment costs but also operational costs, such as production preparation or land acquisition costs for green projects (Zadek and Flynn 2013).

In addition to dedicated green finance, this study will also take into account selected SME financing products. This is based on the fact that SMEs may also use conventional financing sources for making green investment, especially if the green finance landscape is still underdeveloped. Finally, it should be mentioned that the study will also make reference to fiscal incentives such as preferential tax policies. Even though these are not strictly funding, they can reduce the financial burden for SMEs and stimulate additional investments.

Methodology

The objectives of this study are to:

- Present an overview of funding opportunities for SMEs with a focus on green SME projects
- Identify and analyse successful cases of green SME financing
- Identify and analyse barriers to green financing for SMEs

The results of this study can be used to inform relevant stakeholders on the situation regarding access to finance by SMEs in China. This shall especially foster the development, up-scaling and replication of green financing schemes for SMEs to enable more investments in sustainable production and consumption practices.

Data collection was conducted through literature review and face-to-face interviews.

Literature review was conducted on relevant topics, including the situation of SMEs in China, situation and trends in green financing, etc. Reviewed literature includes studies, reports, newspaper articles as well as statistical data.

Face-to-face interviews were held with senior officials in Chinese financing institutions, international donor organisation as well as research institutes and consultancies, in Beijing, China between June 21, and June 27, 2015.

SME and Green Finance in China

Government schemes

Promoting SMEs and green growth

The Chinese Government acknowledges and promotes the contribution of SMEs to the national economy. At the same time, it also places great emphasis on achieving low-carbon green growth through the development of green industries and phasing out of polluting industries. Many regulations, plans and policies are in place to support these aims. Yet it has been shown that China's overall SCP governance system is still insufficient to address the enormous environmental problems that China faces (Schroeder 2014).

One of the most important guiding documents for the Chinese economy is the 12th Five-Year Plan (FYP 2011-2015). Amongst other things, it highlights the need to support SME growth and green development and identifies seven "strategic emerging industries" that are meant to lead future industrial modernisation and technological development. Three of these sectors are directly related to sustainable consumption and production (SCP): energy efficient and environmental technologies, new energy and new-energy vehicles (National People's Congress 2011, Casey and Koleski 2011).

The topic of finance to achieving green growth has also been included in the FYPs. Both SME finance and green finance have been recognised as important success factors for reaching the targets set forth in the 12th FYP in China. Central and local governments have allocated specific funds and subsidies for SMEs and green projects, and implemented corresponding fiscal policies to promote their development (Ge et al. 2012). The 13th FYP is likely to continue focusing on green growth and energy efficiency. It is also expected to include a detailed section on green finance (Climate Bonds 2015).

Government funding for green SME investments

Between 2007 and 2012, the Chinese central government allocated more than EUR 58.9[2] billion to support China's green and low carbon development (Green Finance Task Force 2015b). Above all, the focus is placed on the development of renewables, energy efficient technology and clean technology for industrial production. However, government funding is mostly geared towards large state-owned enterprises (Ge et al. 2012). For example, industrial facilities need to consume a minimum of 20,000 tonnes of coal equivalent (tce) before retrofitting and achieve energy savings of at least 5,000 tce in order to become eligible for the **Financial Rewards for Energy-Saving Technical Retrofits Programme**. Micro- and small-sized enterprises usually do not have such a saving potential, therefore are excluded from this scheme (Shen et al. 2012).

Despite the general spotlight being on large polluters, the government has also opened up some financial windows for SMEs. Important steps have, for instance, been

2 Throughout the study monetary amounts will be expressed in Euro (EUR). Conversion rates were retrieved from www.oanda.com on 27.11.2015 (EUR 1 = USD 1.06163 = CNY 6.71). Decimal numbers were rounded to one decimal place; amounts below 1 million were rounded to increments of 1,000.

taken in regard to **energy service companies (ESCOs)**. These companies, of which many are small- or medium-sized, provide services for energy retrofitting to energy-intensive companies. Funding for the required investments can come from various sources, including the ESCO itself or the serviced company. Out of a variety of different funding models, the government financially incentivises the "shared-savings" model since 2010. More information on this model and the incentives included are provided below.

The **Innovation Fund for Small Technology-based Firms** (Innofund) addresses a broader base of SMEs. It was established by the State Council in 1999 with the purpose to support technological innovation and to channel private capital to small- and medium-sized start-up firms (Global Times 2013). Over the past decade, Innofund has invested in a number of technology sectors including new energy and energy efficiency, emissions reduction, resource efficiency and environment. Depending on the type of project and its development stage, the Innofund provides funding in form of grants, soft loans or equity investment (RightSite 2010).

Another government support mechanism is the national **Clean Development Mechanism Fund** (CDM) that was established in 2006 to support low carbon development in China. Besides grants for research and awareness raising, the CDM Fund provides preferential loans covering energy conservation and efficiency, renewable energy and related equipment manufacturing (Huan 2013).

In addition to these schemes, there exist further **funds, subsidies and fiscal incentives** to support the country's green growth. For example, fiscal measures to promote renewable energy include feed-in tariffs and reduced value-added tax (VAT) and/or income tax for wind, solar and biomass power generation; removal of import duty for renewable energy technology; as well as subsidies for renewable energy generation, energy savings and emission reductions (Green Fiscal Policy Network, n.d.).

Government funding for SMEs in general

In September 2015, the State Council announced that the previous special funds supporting SMEs have been consolidated into the **National SME Development Fund**. The central government will contribute EUR 2.2 billion and attract private and state-owned enterprises, financial institutions as well as local governments through preferential policies, so that total fund size could reach EUR 8.8 billion (State Council 2015b). It aims at alleviating financing difficulties for SMEs and intensifies the efforts to promote mass entrepreneurship and innovation and create new growth momentum. It is supposed to act as a government-driven seed fund (Datenna 2015).

In August 2015, a new round of **preferential tax policies** for SMEs was announced. SMEs with a taxable income not exceeding EUR 44,000 will be allowed to pay corporate income tax (CIT) at the rate of 20% on only half of their taxable income. SMEs with a monthly sales volume of EUR 2,900-4,400 will be exempt from VAT and business tax. The policy took effect in October 2015 and will last at least until December 2017 (China Briefing 2015). The State Council decided in April 2015 to **clear up administrative fees** for enterprises nationwide. More than 600 charges have been cancelled, suspended or reduced since. Reducing taxation and fees for small- and micro-size businesses has been a focus of this initiative (State Council 2015a).

Besides the central government, **local governments have allocated specific funds and subsidies** for SMEs, and implemented corresponding tax relief policies to promote their development (Ge et al. 2012). For example, many credit guarantee organisations are funded by local departments and agencies (Situ 2011).

National banking sector

Bank loans are the primary source of formal external finance to companies in China, also in regard to SCP (PWC 2013, Bai et al. 2014). The Chinese banking landscape is characterised by the co-existence of different types of banks – including state policy banks, state-owned commercial banks, joint-stock commercial banks and city commercial banks. As will be shown in the next chapters, these banks play varying roles in financing SMEs and SCP-related activities. So far no lending institutions have been established in China that focus explicitly on SMEs or SCP-related investment (Green Finance Task Force 2015a).

Government guidance and incentives for the banking sector

The Chinese government in cooperation with organisations responsible for banking regulation have taken efforts to step up guidance and incentives for banks to target SMEs and green sectors (OECD 2015). In 2007, the China Banking Regulatory Commission (CBRC), the Ministry of Environmental Protection, and the People's Bank of China launched the **Green Credit Policy** to encourage banks to lend more to energy efficient and climate-friendly projects, while lending less to highly polluting and energy-consuming projects. In 2012, the CBRC introduced the **Green Credit Guidelines**, providing more detailed guidance on how to support the green economy and to prevent environmental and social risks (CBRC 2012, Bai et al. 2014).

In 2013, China's State Council released the "Opinions on Financial Support to the Development of Small and Micro-sized Enterprises" which put forward eight specific financial measures to support the **development of SMEs** in the country. Amongst other things, state-owned banks are required to increase SME credit and to better support small financial institutions and private investors (China Briefing 2013). In 2014, the State Council pledged further measures to ease financing burdens for SMEs, such as relaxing the loan-to-deposit ratio for banks (Reuters 2014).

Reducing risks for banks can be a powerful tool for making finance available for higher risk customers such as SMEs. Banks' lending risk was reduced when the People's Bank of China (PBoC) launched its **online asset registry for accounts receivable** in 2007, enabling short-term loans secured against specific moveable assets to be registered centrally and publicly. In 2009, the PBoC also opened its **asset registry for leases**, allowing a market in fixed asset finance to develop (ACCA 2014).

A **credit guarantee system (CGS)** for SMEs was introduced in 1999 and further promoted through the 2006 "Opinions on the construction of SME credit guarantee scheme" (Mu 2002, Shim 2006). Credit guarantee facilities contribute significantly to reducing banks' lending risks as they warrant SME loans. By the end of 2008, there were 4,247 credit guarantee organisations operating at the regional and local level, and the total guarantee amount of SME loans reached EUR 257.6 billion. In 2008, there were 384,000 guarantees with less than EUR 1.2 million each, accounting for 96% of guarantee business (Zhang and Ye 2010). In July 2015, the State Council announced plans to set up a **central state-backed credit guarantee firm** to support lending despite the economic slowdown (Reuters 2015d).

Green lending with relevance for SMEs

The availability of finance for green investments has been increasing. According to CBRC, green credit provided by China's major banks rose by 16% in 2014 and reached EUR 883 billion at the end of the year (China Daily Europe 2015). It should be noted that banks in China do not necessarily market or advertise specific green or environmental credit lines. Many of them, however, internally monitor which credit is provided to a green and environmentally-friendly investment.

According to a study by Green Watershed (2013) many Chinese banks encourage loans in environmental friendly industries and projects through various internal banking policy provisions: making a list of sectors to which borrowing is encouraged; providing higher quality services for environmental loans; developing new green financial products (such as energy conservation loans); establishing special funds to support green credit; cooperating with international financial institutions and introducing external funds. Banks have also adopted measures to withdraw from "high pollution, high energy-consumption, and sectors in excess of capacity". Such measures include strict approval procedures with denial of funding in case of environmental non-compliance; quotas on loans in undesirable sectors; and even withdrawal of outstanding loans (Green Watershed 2013).

Among the various types of banks in China, particularly the **joint-stock commercial banks** have excelled as innovators in green finance. For example, the China Industrial Bank (CIB) is considered a green finance pioneer in China and is currently the only Chinese bank that has established an Environment Finance Department and adopted the Equator Principles (PWC 2013, IISD 2015a). A very important green finance trend is the development of **new forms of collaterals**. In 2006, CIB together with the International Finance Corporation (IFC) established the first "green credit" product in China – a loan fund for energy conservation and emission reduction projects (IISD 2015a). Rather than requiring fixed assets as collateral, CIB accepts expected cash flows or energy-savings generated from the project (PWC 2013). Similarly, several other banks have developed **Energy Management Contracting** (EMC) schemes. In 2014, CIB granted the first **carbon emission right pledge-based loan**, a new financing instrument that is based on pledging domestic carbon emission right quota, without additional mortgage and guarantee conditions (CIB 2014). This and other innovative collateral products (e.g. accounts receivable pledge loans, also called factoring) are increasingly being accepted by Chinese banks and cater to the needs of asset-poor SMEs.

Besides purely nationally-driven approaches, several joint-stock banks **cooperate with international financial institutions and donor agencies** to channel funding into target sectors, above all clean energy. A prominent example of such joint efforts is described in below.

Another internationally supported credit programme is the **China Energy Efficiency Financing Project** (CHEEF) by the World Bank, implemented through Exim Bank and Huaxia Bank (phase I, since 2008) as well as Minsheng Bank (phase II, 2010-2016). A certain amount of the loans under this scheme was allocated to SMEs. Loan closing date for the second phase of the programme was in March 2015 (World Bank 2010).

China Utility-based Energy Efficiency Finance Programme for SMEs

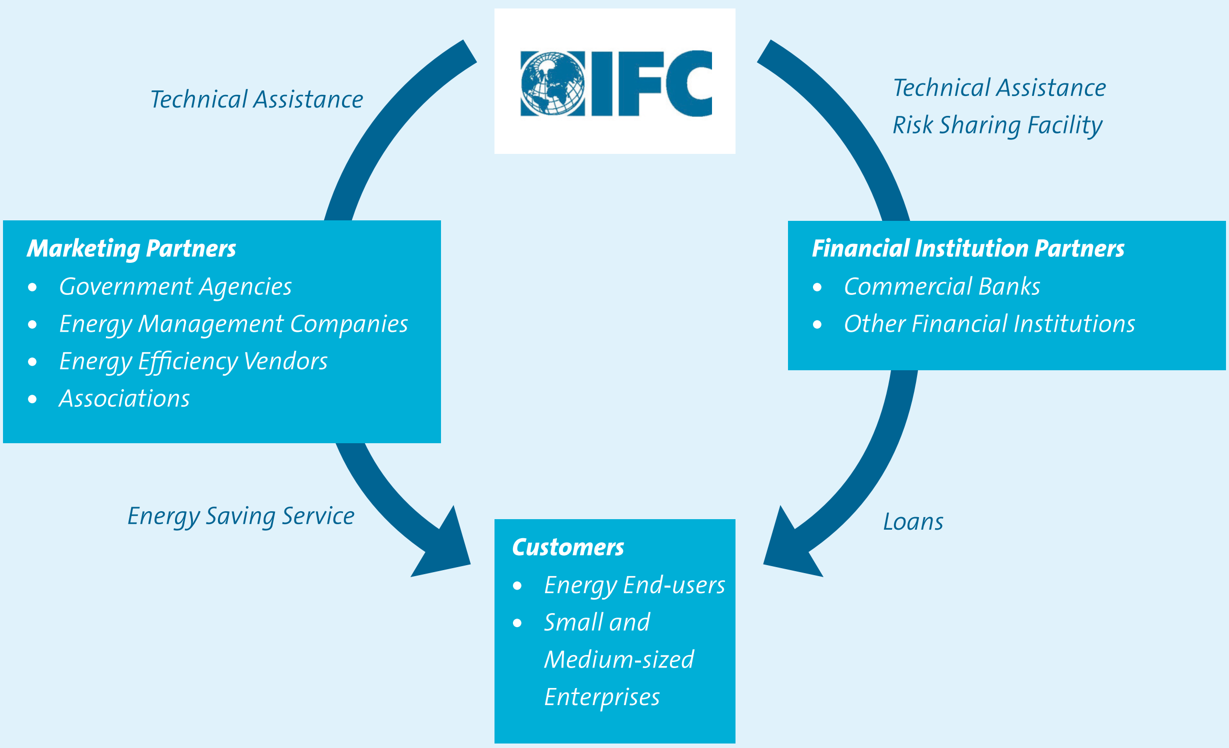
In 2006, the IFC launched the China Utility-based Energy Efficiency Finance Programme (CHUEE) together with several Chinese partner banks. The expectation in the beginning was that 60% of the guaranteed loans would be small (about EUR 200,000). In reality, the average loan size was EUR 5.4 million, and small loans constituted less than 10% of the actual portfolio. This meant that lending went mainly to medium and large-sized enterprises (Independent Evaluation Group 2010). Therefore an additional programme with particular SME focus, called CHUEE SME, was introduced in 2011/12 (IFC n.d.).

One of the main features of the CHUEE SME programme is its EUR 526 million risk-sharing facility that provides guarantees for SME loans to up to seven Chinese banks* (see Figure 1). Loans by the partner banks can be offered for a maximum of five years (IISD 2014). The CHUEE SME programme focuses on industries that have the highest potential for efficiency gains. Sectors include manufacturing of chemicals, metals, minerals, textiles etc. Focus is on energy efficiency – funded projects should have expected energy savings of at least 15% (IFC n.d.).

The example of the Shenzhen Henglihua Cleaning Services Company demonstrates how investments supported by CHUEE/CHUEE SME contribute to SCP practices. The company received a EUR 1.5 million loan from the China Industrial Bank under the CHUEE programme and invested the money in the upgrading of machinery to reduce energy consumption. As a result, the company now saves over 60% of power and fuel and has reduced production costs by almost EUR 736,000 per year. CO_2 emissions are estimated to have gone down by 7,188 tonnes per year (IFC n.d.).

* By June 2013, four banks had entered the programme: China Industrial Bank, Binhai Rural Commercial Bank, Bank of Beijing and Bank of Shanghai (IFC 2013).

Figure 1: Structure of the CHUEE SME programme (IFC n.d.)



Financial support is also provided through **bilateral cooperation**. For example, from 2008-2014, KfW provided the Exim Bank of China with funding for long-term loans to private investors for energy efficient measures (IKI 2013). In 2009, AfD (Agence francaise de Developpement) entered into cooperation with Shanghai Pudong Development Bank (SPDB), Huaxia Bank and China Merchants Bank to provide green credit for high energy-consuming industries that are investing in energy management (IPEEC n.d.).

Many **city commercial banks** that traditionally serve SMEs also consider granting finance for green business development. For example, green finance is a focus area of the Bank of Beijing (BOB). Therefore, BOB supports the development of SMEs in sectors such as energy conservation, emission reductions, new energy and new materials. Amongst other things, BOB provides “energy conservation loans” and accepts pledge-of right to future returns (BOB 2011).

Chinese **state-owned commercial banks and state policy banks** are also very active in green finance. However, these banks are quite conservative in their lending practices and prefer to provide funding to large state-owned enterprises rather than to SMEs (PWC 2013).

SME lending in general

The stock of SME bank loans has increased on average 19% per year since 2009 and reached EUR 3.69 trillion in 2012, thus representing more than 60% of total outstanding business loans (OECD 2015). For MSEs, loans outstanding in 2012 were just below EUR 1.77 trillion (ADB 2014, Shi 2013). The fact that many financial institutions have started to accept new forms of collaterals (e.g. accounts receivable) that better reflect the characteristics of SMEs, has led to an increase in SME lending generally.

Small- and medium-sized **city commercial banks** are important suppliers of loans to SMEs. Compared to larger banks they are more flexible to design innovative financial products and lending models that cater to the needs of SMEs (PWC 2013).

Joint-stock commercial banks also serve smaller customers to a certain degree (PWC 2013). For example, SMEs are a target segment for the Shanghai Pudong Development Bank, Huaxia Bank, Minsheng Bank and others (PWC 2013, Shen et al. 2012). Due to the introduction of several innovative financing products as described above, the China Industrial Bank (CIB) has also become a popular source of funding for SMEs (PWC 2013).

Finally, Chinese **state-owned commercial banks** (called ‘the Big 5’[3]) and **state policy banks** have also expanded lending to SMEs (OECD 2015). For example, the China Development Bank (CDB) offers low-interest loans and large credit lines to finance SMEs. CDB’s total loans made to the SME sector amounted to EUR 368 billion as of the end of 2014, including EUR 147.2 billion provided to micro enterprises (CDB 2014).

Non-deposit taking lenders and informal finance

If SMEs cannot access funding from conventional banks, for example due to a lack of collaterals, they turn to other sources of finance – so called non-deposit taking lenders (NDTL). These institutions are subject to less supervision than banks because they do not take public deposits. This allows them to reach clients that are not served by banks. The definition of NDTL varies between sources but usually comprises loan companies, financial leasing companies, microcredit companies, pawn shops, etc. Other financing sources available in China include interpersonal borrowing, money lenders, loan brokers, private money houses, etc. These sources are informal and sometimes even illegal (PBC Research Institute et al 2013, Tsai 2004).

In 2008 a financial reform enabled the creation of **microcredit companies** that serve the specific borrowing needs of SMEs and individuals (ADB and OECD 2014). Due to this change the number of microfinance companies has grown strongly. By the end of 2013, there existing 7,839 micro-credit companies that recorded outstanding loans of EUR billion nation-wide, with year-on-year growths of 28% and 38% respectively. (Shi 2014). Strong growth was also observed in **pawn shops** – by 2014, 7,000 pawn shops had been established (Tsai 2015). It is expected that **financial leasing companies** will also engage more intensively in SME leasing activities. That this is also relevant for green investments and SCP practices is shown by the fact that ESCOs and other companies requiring energy efficiency equipment increasingly work with leasing companies to secure financing (Shi 2013, Evans et al. 2015).

The number of **private investment firms and funds**, including private equity and venture capital, has also developed rapidly in recent years. However, due to limited profitability and the significant risks of the environmental industry in China, green financing through private firms and funds is still rather low (Green Finance Task

3 China’s Big Five Banks include the Industrial and Commercial Bank of China, China Construction Bank, Agricultural Bank of China, Bank of China and Bank of Communications

Force 2015b). Investment through venture capital and private equity accounted only for 2.2% of China's total clean energy investment in 2010 (Evans et al. 2015). In January 2015, the State Council announced that a EUR 5.9 billion **government venture capital fund** will be set up to support start-ups in emerging industries (Reuters 2015a).

Various forms of **online financial services**, including peer-to-peer lending, crowdfunding as well as credit extension by internet-based firms, have become more and more popular in China (Shi 2013). In 2006, CreditEase launched the first peer-to-peer (P2P) lending platform in China, connecting lenders with micro-entrepreneurs. In 2015, there was a total of 1,627 registered P2P lending platforms and P2P credit stood at EUR 50 billion (Tsai 2015, Reuters 2015b). Another important online lending vehicle is AliFinance, founded by the e-commerce platform Alibaba in 2011. Already two years after it took up operations AliFinance had outstanding loans of EUR 15.5 billion (CGAP 2013). In addition to these new funding sources, many **crowdfunding platforms** have developed – in 2014 there were 114 platforms registered in China, including equity crowdfunding platforms as well as pre-selling, donation- or rewards-based platforms (Tsai 2015). It is estimated that the crowdfunding market in China could grow to almost EUR 40 billion by 2025 (SWITCH-Asia MAG 2014). Overall, online platforms often provide many benefits for SMEs as they allow for flexible lending and repayment terms. Using vast amounts of personal data, e.g. from credit card companies or online purchases, they have developed their own risk assessment systems and often do not require any collateral.

Finally, it was mentioned several times during interviews that the **greening of supply chains** could potentially enhance finance for SMEs in the future. Under this approach, large multinational corporations looking for ways to improve the environmental performance of their value chains could guarantee for loans granted to their up- and downstream SME partners. For example, leading companies such as Walmart, Tesco, Levi Strauss & Co and the London-based investment bank Sustainable Development Capital LLP (SDCL) intend to enhance energy efficiency in their supply chains in China and to identify financing solutions for implementation (Northstar Initiative 2013).

NDTL typically do not advertise their products as green financing and due to their informal character do not monitor the sector or investment type in which their money flows. It can be expected, however that some of the financing that SMEs access from these informal sources is used, for example, to invest in measures that make SMEs comply with environmental regulation.

Capital market

Capital market opportunities for green SME finance

Opportunities to access green finance from capital markets are smaller compared to funding from banks (Green Finance Task Force 2015b). Currently, China's green capital market policies are still focused on restricting finance for polluting industries rather than enabling green investments. Most importantly, the "Green Securities Policy" that was launched in 2008 requires companies from thirteen heavily polluting industries to pass environmental assessments before pursuing an initial public offering (IPO) or refinancing (Bai et al. 2014). So far, a preferential IPO channel for green enterprises/SMEs has not been established (Green Finance Task Force 2015b).

The corporate bond market is gradually becoming a source of green finance. In 2011, green bonds in China reached EUR 5.6 billion (Chen and Wang 2014). In August 2013, the State Council announced plans to further promote the development of the corporate green bonds market in China as part of meeting the objectives of the 12th Five-Year Plan (IISD 2014). New regulations were expected to be finalised in the second half of 2015 (Climate Bonds 2015).

Another growth sector is China's emissions trading market. Since 2011, emissions trading pilot schemes have been initiated in seven provinces and cities[4], testing different operational methods. Overall, these pilots have distributed 1 billion tonnes of carbon emission quotas to around 2,000 enterprises (IISD 2015a). However, as thresholds for liability are high in most pilot areas – the lowest threshold can be found in Shenzhen, where companies are held liable if they emit more than 5,000 tonnes of CO_2 per annum – micro and small-sized enterprises are usually not included in the market (Ernst & Young 2014). Additionally, free permit allocation and slowing industrial production have limited companies' incentive to engage in trading (Reuters 2015c). A nation-wide carbon trading scheme is expected to be launched by the end of 2016 or in early 2017 (Reuters 2015c).

Capital market financing for SMEs in general

The Chinese capital market offers some opportunities for SMEs to raise capital. While large state-owned companies used to dominate the capital market in China,

4 Shenzhen, Shanghai, Beijing, Guangdong, Tianjin, Hubei and Chongqing.

more and more SMEs are now applying for IPO (Shenzhen Stock Exchange 2010). What is still lacking are exit opportunities for private equity investors and venture capitalists who want to invest in SMEs.

Listed SMEs can sell shares on the **SME Board** or the **ChiNext market**. Both are established as second board under the Shenzhen Stock Exchange (SZSE) and were launched in 2004 and 2009, respectively. The SME Board adopts almost the same listing rules as the main board and is geared towards high-growth manufacturing businesses (Ding and Li 2015). By the end of 2012 it had 701 listed companies with a total market capitalisation of EUR 426.9 billion (ADB 2014). The ChiNext Market is meant to foster innovative industries and growing start-ups. Compared to the SME Board, the ChiNext market uses less stringent listing rules and requires a shorter operational history and less profit for potential issuers. It therefore caters better to the needs of new companies (Ding and Li 2015). By the end of 2012, ChiNext had 355 listed companies with total market capitalisation of EUR 128.5 billion (ADB 2014). Besides these two boards, the **New Third Board**, also called National SME Share Transfer System (NSSTS) or National Equities Exchange and Quotation (NEEQ), functions as an over-the-counter (OTC) system for unlisted domestic SMEs. In 2013, an equity value of 658 SMEs was exchanged in the New Third Board with a volume of EUR 119.8 million (OECD 2015). While the Chinese capital market suffered for a long time from a lack of interest from firms wanting to list or from investors, it began to boom in 2014 (Reuters 2013). Fundraising through the New Third Board had increased tenfold by November 2014 according to the Financial Times (China Daily USA 2015). How the recent crash of the Chinese stock market will affect this development in the future remains to be seen.

Besides the equity market, the bond market for SMEs has also grown in recent years. In 2007, SME Regional Leader Joint Bonds were introduced that are traded in the interbank and exchange markets. In 2011, the joint bonds amounted to EUR 220.8 million (ADB 2014). Two years before, in 2009, the National Association of Financial Market Institutional Investors launched an SME collective note, that is a medium-term debt instrument issued by up to ten SMEs and traded in the interbank market (ADB 2014). Since 2012, unlisted SMEs are also allowed to issue private placement bonds. By November 2013, SZSE had filed 234 SME private placement bonds (ADB 2014). So-called SME bonds have also been issued by banks with the aim to use the funds collected for offering loans to SMEs. In 2012, commercial banks issued EUR 24.9 billion in such SME bonds. However, there was limited disclosure on whether the funds were actually utilised to providing loans to SMEs (IISD 2014). Overall, the scale of SME finance through the bonds market remains limited in China.

A Successful Case of Green SME Finance: Energy Service Companies (ESCOs)

The ESCO industry has developed rapidly in China in the last 20 years. Not only the number of ESCOs has grown, but also the total capital invested in clean energy projects through ESCOs. With this expansion of the ESCO market, the need for financing has been steadily growing (Evans et al. 2015). Yet, many ESCOs are small and medium-sized enterprises that face similar challenges as other Chinese SMEs – for example the access to finance for the energy efficiency interventions (Qi 2013).

The most widely used financing model in the Chinese ESCO market is the **"shared savings"** model which has become very popular for financing energy services. Under this model, the ESCO covers the majority of project costs and receives payment once energy savings have been achieved (IFC and EMCA n.d.). Risk is minimised for the industrial enterprise in which the energy efficiency measures have been implemented. If the expected energy savings are not achieved, the enterprises do not have to pay the ESCO. Despite this model being risky for the ESCOs it is preferred by stakeholders from the government and industry (Evans et al. 2015). The second model is the **"guaranteed savings"** in which the loan is taken up by the industrial enterprise and the ESCO guarantees the enterprise a certain amount of savings (Crossley 2014). Another model is the "fee-for-service" model. In this model, an ESCO makes the investment in energy efficiency and sells the energy to end-users who pay connection fees and regular fees to the ESCO. The end-user pays as long as the energy service is delivered and never becomes the owner of the system (see Figure 2).

In 2010, the **Chinese government stepped up efforts to support qualified ESCOs**[5]. Since then, central and provincial governments have been providing funding for industrial projects with energy savings between 500 and 10,000 tonnes coal equivalent (tce) and between 100 and 10,000 tce for projects in other sectors. For every tce of verified energy savings, the national government pays EUR 35 (CNY 240) and the provincial governments are required to offer a minimum of EUR 9 (CNY 60). The level of the local matching fund varies depending on the local situation. For ESCOs that are not suitable for the national incentive, the municipal government in Beijing offers an incentive that can be fixed (EUR 66 (CNY 450) per tce) or that is equivalent to 15-20% of the project cost (Shen et al. 2012).

The government has also developed a **favourable taxation policy** under which qualified ESCOs are exempt from income tax for the first three years of a project and subject to only 50% of the income tax rate during the second three years of that project. Furthermore, qualified ESCOs are exempted from turnover and value added taxes (Shen et al. 2012, Industrial Efficiency Policy Database 2011).

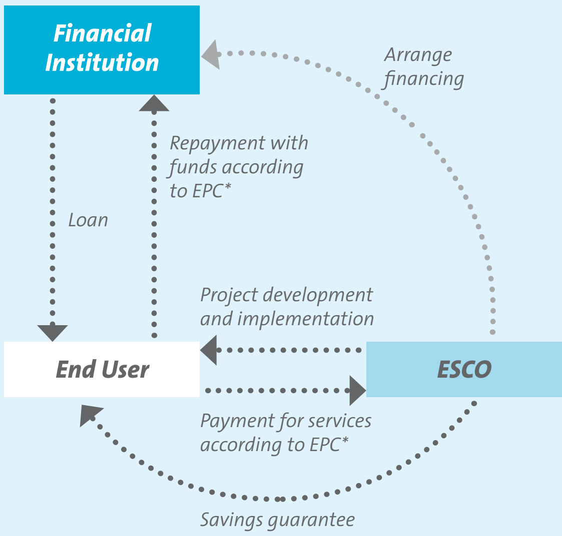
Several banks have **loan programmes for energy saving projects** using an ESCO model. In 2013, three Chinese banks (Bank of Beijing, Shanghai Pudong Development Bank, and China Industrial Bank) supported more than 300 ESCOs for about 500 projects, and financed loans totalling more than EUR 736 million (Evans et al. 2015).

Many banks have also started to promote **Energy Management Contracting (EMC)**. Under this approach, loans for energy saving technologies are paid off using the achieved cost savings (PWC 2013). In January 2015, the China Banking Regulatory Commission (CBRC) and National Development and Reform Commission (NDRC) issued the Energy Efficiency Credit Guidelines to further specify the development of energy efficiency credit (CBRC and NDRC 2015). If banks will actively comply with these new guidelines, lending to ESCOs is likely to further increase in the future.

5 "Qualified" ESCOs are those that operate under a shared-savings model.

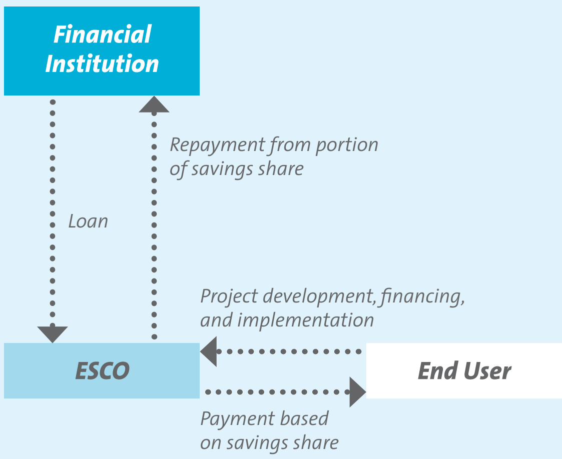
Figure 2: The two most widely used ESCO financing models

Guaranteed Savings Contracts



* EPC: engineering, procurement and construction

Shared Savings Contracts



Key Challenges Encountered by SMEs in Accessing Green Finance

Access to finance is a challenge that SMEs all over the world face. Compared to international standards, many of the "medium-sized" Chinese enterprises are actually quite large. Their access to finance is not that big of a challenge. When discussing access to finance problems, China's leaders mostly refer to micro and small-sized enterprises (MSEs), rather than medium-sized. While SMEs as a whole remain credit constrained, it is the MSEs that have greatest difficulty in obtaining funding (Shen et al. 2012). During interviews it was learnt that this situation is not expected to change significantly in the coming years as policy-makers and banks hope to achieve their green (credit) targets primarily through the transformation of large polluting enterprises and through the implementation of broad renewable energy projects. For providing finance to MSEs, the transaction costs are much higher for banks. With regard to green finance this means that they would have to incur higher bank internal costs if they tried to meet their green financing targets through MSEs.

Specific challenges that Chinese MSMEs face in accessing green finance are described below. Barriers exist both on the supply- and demand-side.

Demand-side barriers

- **SMEs have low awareness and knowledge of opportunities for funding.** The smaller the company, the less aware of policies for green SME finance. Enterprises rely on information from the government and related associations to understand supporting policy, subsidies, rewards, and tax benefits (IISD 2015b, Ge et al. 2012). These do not always list the best funding options for the SMEs or give a full account of the options available.

- **SMEs lack financial literacy and financial track-records.** SMEs often lack the necessary financial management capacities and accounting skills that are required for a comprehensive loan application. Even if SMEs have these skills and are able to submit a loan application, many enterprises simply do not exist long enough to provide banks with a credit history. Such a credit history is often required to receive loans.

- **ESCOs face high financial burdens and risk.** Many ESCOs in China operate under the "shared savings model" in order to become eligible for the ESCO support scheme provided by the central and local governments. This approach requires that the ESCOs provide the majority of funding for the project. They receive payments later than the expected energy savings are realised. With limited working capital many ESCO projects are kept small and prevented from expansion. Attractiveness for external investors is small as the financial risk of the project is borne almost completely by the ESCO (Evans et al. 2015).

Supply-side barriers

- **Financial institutions have high collateral requirements.** In the absence of trust, lenders rely on collaterals. Generally, SMEs tend to have a small production scale and light assets that do not qualify for bank requirements (Ge et al. 2012). Service-oriented companies such as ESCOs rely primarily on shared energy-savings or other irregular cash inflows as the revenue source and thus lack collateral (Shen et al. 2012). The collateral requirements, both for bank lending and capital markets, are usually too rigorous for Chinese SMEs (Han 2013).

- **Financial institutions lack tools to assess SMEs' credit default risk.** One of the most challenging problems that hamper SMEs' access to financing is the risky business environment in which they operate. Many SMEs in China operate on markets with fluctuating supply and demand (Shen et al. 2012). At the same time, financial institutions and investors often lack the ability and tools to assess default risks of SMEs, particularly in emerging sectors (Reuters 2013, Ge et al. 2012). Consequently, it becomes very difficult and costly for banks to evaluate SMEs.

- **Financial institutions charge high interest rates for lending.** SMEs usually pay higher interest rates on loans than larger companies. According to a report on Small and Micro Business Financing (Boao Review et al. 2013), more than half of the surveyed SMEs stated that their borrowing costs were between 6% and 10%, while the remaining SMEs said that their interest rates were over 10%. The lending rate of informal financing is over 20%, and some private financing sources even charge interests as high as 140%. Investments in SCP measures that sometimes have a longer payback period are especially more difficult under these conditions.

- **Small lending institutions that are important sources of funding for (green) SMEs suffer from low financial capacity.** Smaller banks and microcredit companies in China play a key role in financing SMEs. However, they often face funding pressure because they cannot borrow more than half the amount of their own capital from other banks. Most of the small guarantee companies are reportedly suffering from insufficient funds and accumulating losses (Shim 2006).

- **Many investors and banks are biased towards energy-related projects.** They are inclined to invest in industry sectors which are supported by national policies (Ge et al. 2012). Focus is therefore placed on limiting the growth of "high-pollution, energy-intensive and over-capacity industries", improving energy efficiency of necessary industries and developing renewable energy (PWC 2013). Compared to energy-related topics, financing for environmental protection (air, water, waste) is underrepresented. SMEs in the traditional manufacturing sector have even more difficulties in accessing finance as many banks are trying to reduce lending to polluting industries. Yet, for investments to making their operations less polluting, they also require funding.

- **Guidelines for SME lending and green lending are not fully complied with.** Lack of implementation and monitoring capacity leads to the SME and Green Lending Guidelines for financial institutions not being strictly followed. In spite of government guidelines for SME lending, banks use loopholes allowing them to avoid lending to SMEs. For example, loans to state-owned enterprises (SOEs) can be disguised as SME loans by making loans to small subsidiaries or paying small suppliers on behalf of SOEs (Reuters 2013).

These barriers make clear that there is still a lot to be done for enabling a better access of SMEs to financing in general and, specifically, green finance. Pushing for more SCP in its economy is almost inevitable, if the country wants to reduce pollution from its industrial activities. SMEs as an important pillar of the Chines economy must contribute their share to the efforts of making production more sustainable. Providing financing is a crucial prerequisite to accomplish this goal. What can be done to increase the amount as well as access to finance for Chinese SMEs is presented in the next section.

Conclusions

The analysis above has shown that finance is available for SMEs in general as well as for dedicated green SME investments in China. The government has recognised the need of SMEs for investments to implement SCP measures. With SCP included in the United Nations' Sustainable Development Goals (SDGs) the topic will now gain more prominence in the political arena, internationally and nationally. It is clear that suitable financing mechanisms need to be in place to enable companies and especially SMEs to leapfrog a polluting growth path, and support them from early on in SCP implementation. Given the barriers described above, the following recommendations are given to support the development of a financing landscape that is supportive to green investments by SMEs:

- **Application procedures for financing should be made easier for SMEs.** An important measure for easier access of SMEs to funding for green investments would be the issuance of a standardised procurement list of energy-saving or resource efficient technologies that are eligible, for example, for subsidy programmes. With such a list, loan officers would be clear on which technologies are eligible for funding. SMEs could also obtain information on whether their planned investment has the chance of receiving a subsidy. In addition, it would also be beneficial to standardise application forms across lenders so that SMEs can hand in the same application to various financial institutions.

- **Incentives should be increased for financial institutions to lend to SMEs.** Firstly, the already existing credit guarantee system should be further expanded. Policy guidance needs to be increased and disseminated by the responsible authorities to the financing institutions on how SMEs are to be better supported. In addition, more direct benefits should be created for banks and financial institutions to engage with SMEs, for instance by providing financial rewards when they increase their share of (green) SME lending or set up specialised (green) SME units.

- **The potential of SMEs for SCP needs to be recognised.** Larger scale industries in China are currently receiving widespread attention to reduce resource consumption, particularly in regard to energy consumption. This is relevant and necessary. Yet, the focus of such initiative should be widened to also include SMEs, or more dedicated SME initiatives should be launched. Such a push to promote efficiency gains among SMEs would need to come from all stakeholders working with SMEs – the government as well as private and financial sector stakeholders.

- **More information on economic and environmental benefits of SCP should be made available to SMEs.** Investing in SCP measures is often considered by SMEs only to comply with environmental regulations. The economic benefits arising from a shift towards SCP practices are usually less clear to the SMEs. Capacity building programmes and initiatives to disseminate the idea of SCP as a win-win strategy – complying with environmental regulation and achieving cost savings – should be implemented more widely. This will also enlarge the SCP project pipeline which will, in turn, convince more financial institutions that this is a market worth investing in.

- **Financial institutions should function as conveyors for SCP.** Several banks and other financial institutions are already working with green financing products. This means that they are also collecting experiences on which green investments make sense economically and environmentally. With their monitoring practices they have an aggregated picture of good and best-practices in the industry. This wealth of information by the financial institutions should be tapped to create more awareness on SCP measures among SMEs. Financial institutions could market investments in certain SCP measures that have proven to be successful and economical, and offer the corresponding finance products. They would serve as multipliers for successful SCP interventions.

- **More capacity building is required for financial institutions to increase their understanding of resource efficient technologies and SCP business models.** Although some financing institutions may already have good knowledge about potential SCP measures and green investments, many still lack in understanding of the economics behind such measures. Normally financial institutions give funding for investments for measures and technologies they are familiar with. They may not be aware of new energy efficient and resource efficient technologies, and are thus reluctant to give funding for such investments. Therefore, loan officers in financial institutions should be made familiar with the concept of SCP and key technologies and innovations. In addition, financial institutions should then build up dedicated teams that cater to the green financing needs of SMEs. By creating these resources, understanding of and trust towards SMEs, financial institutions' capacity can be increased and, in turn, risk assessment procedures can be made more efficient.

- **Financial institutions should be encouraged to use an SCP product portfolio to position themselves in the market.** While in other financial markets, for example in India, some banks have used the opportunity to position themselves as leaders in a particular sustainability topic (e.g. energy efficiency), this has not yet happened in China. Public recognition from the government could encourage such a trend. As companies consider efficiency gains across their entire operational processes are less likely to default on their credit, financial institutions can build a more reliable customer base by attracting companies to invest in SCP measures.

- **Other ESCO models beside the "shared saving" model should receive more support to further increase ESCO activities.** The ESCO industry would benefit from a greater diversity of ESCO financing models. A greater diversity of ESCO financing models would allow different actors to access funding from banks or financial institutions, which in turn would increase the overall availability of funding to energy efficiency projects in companies. Thus far the "shared saving" model is supported by the government in which the ESCOs take up the loans. In the "guaranteed saving" model, a loan would be taken by company in which the energy efficiency measure is implemented and the ESCO would facilitate the access to finance. In the "fee-for-service" model the investment would also be taken by the company and not the ESCO.

In 2014, China has become the largest economy in the world and, with that, for several years has been the largest emitter of greenhouse gas emissions. The environmental pollution, especially air pollution, in some of Chinese cities is a problem that severely affects the health of Chinese population. The Chinese government has therefore started taking action to combat pollution. As already described above, many of the actions are targeted at medium-sized or large enterprises. Micro and small-sized enterprises (MSEs) do not have the same opportunities to reduce the negative impacts of their production patterns as medium and large companies do. Especially the access to finance hampers efforts of the MSEs to shift to SCP measures. The recommendations given above can guide the next steps in increasing the funding available for MSEs for investments in SCP.

With its projects, the EU-funded SWITCH-Asia Programme can contribute to the development of the financial sector in China, especially with regard to the development of dedicated green SME finance products. There is an enormous opportunity for grant projects funded by the SWITCH-Asia Programme to contribute to SCP implementation. As up-scaling of SCP practices is the overall goal of the Programme and most grant projects engage directly with SMEs, the SWITCH-Asia Programme can generate overall demand for green SME finance. It needs to be demonstrated to financial institutions that such demand exists to make of such financing products.

If project activities are related to SMEs, SWITCH-Asia projects should include a financing component. SMEs could be trained to increase their financial literacy and supported in developing appropriate financing proposals, preferably for SCP measures. At the same time financing institutions could be targeted with capacity building on specific opportunities for green investments. They could be sensitised on types of SCP investments relevant for particular project. This would make the access to finance easier for SMEs. Activities with financial institutions could be implemented on local branch level as well as general management level.

In addition, SWITCH-Asia projects could work on establishing alternative financing models – for example leasing models – for relevant SCP measures. There is also potential for bringing the supply and demand side together. Fairs and market places could be set-up where financial institutions and SMEs meet. At such events, investment proposals would come together with funding. These events could be held for the SMEs involved in one particular SWITCH-Asia project only, or for all SMEs participating in the SWITCH-Asia projects in one particular country, or even at a regional level with financial institutions and SMEs from several countries. The SWITCH-Asia Programme should make use of its unique position and broad network to push the agenda for more and better access to green finance for SMEs in China and the region.

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Annex: Database with Funding Schemes

The Innovation Fund for Small Technology-based Firms (Innofund)	
Implementing institution	Ministry of Science and Technology (MoST, in charge of administration), Ministry of Finance (MoF, in charge of funding), Torch High Technology Industry Development Center (under MoST)
Description	Innofund is a government non-profit funding programme initiated by the Torch programme in 1999 to promote the innovation of technology-intensive SMEs in China. The Fund aims at supporting technological innovation, enhancing the environment for innovation and facilitating private capital investments in SMEs especially at an initial stage for development, through market-oriented approaches.
Target group and investments	The support from Innofund focuses on early-stage technology venture in seven technical fields, i.e. IT, biology and medicine, new materials, electromechanical integration, environmental engineering, new energy and low-carbon technology and high-tech services
Type of finance	Grants, loan interest subsidies and equity investments
Volume, duration and status	The government spent a total of CNY 26.8 billion (EUR 3.9 billion) for the fund as of October, 2013. Grants: CNY 0.5 - 1 million (EUR 74,000 – EUR 147,000) on average plus an additional grant from the local government. Loan interest subsidies: Max. 1 million CNY (EUR 147,000) per project in principle, but CNY 2 million (EUR 270,000) for key projects. Duration: 1999 – ongoing Status: Running
Conditions	Registered capital: at least CNY 300,00 (44,000 EUR) Total assets: less than CNY 50 million (EUR 7.3 million) for grants and CNY 80 million (EUR 11.8 million) for loan interest subsidy Annual revenue : less than CNY 50 (EUR 7.3 million) million for grants and CNY 80 million (EUR 11.8 million) for loan interest subsidy The number of employees: less than 300 for grants and 500 for loan interest subsidy Investment budget: less than CNY 10 million (EUR 1.5 million) for grants and CNY 30 million (EUR 4.4 million) for loan interest subsidy Implementation period: 2 years for grants and 2-3 years for loan interest subsidy Equity investments: Max. 20% of the registered capital of the investee company and will be redeemed within a time limit in accordance with law. As a grant recipient, R&D expenditure of applicants needs to account for 5% of the annual revenue at a minimum, and the number of employees holding college degree need to take up more than 30% of the total.
Contact	Administration Center for Innovation Fund for Small Technology-Based Firms, Ministry of Science & Technology P. O. Box 3823, 12, Fuxing Road, Beijing 100038, China Tel: 86-10-63972359 Fax: 86-10-63972391 *http://www.innofund.gov.cn*
Source(s)	Torch High Technology Industry Development Center (n.d.): Innovation fund. *http://www.chinatorch.gov.cn/english/xhtml/fund.html* Furman et al. (2015): Firm Performance and State Innovation Funding: Evidence from China's Innofund Program. Rightsite. Asia (2010): China's InnoFund Supports Startups. *http://rightsite.asia/en/article/chinas-innovation-fund-supports-high-tech-startups* Innofund: Innovation Fund for Small Technology-based Firms 2002 Annual Review.

Financial Rewards for Energy-Saving Technical Retrofits Programme	
Implementing institution	Ministry of Finance (MOF), National Development and Reform Commission (NDRC)
Description	Based on China's 11th Five Year Plan, the programme was launched in 2007, with the purpose of rewarding enterprises engaged in technological renovation projects and having achieved energy savings. Under the programme, the rewarded enterprises are funded from the budget of the central government. China's 12th Five Year plan has developed the programme and focused on ESCO-based financing. MOF and NDRC introduced the Management Regulation of Fiscal Rewards for Energy-Saving technical Retrofits in 2011.
Target group and investments	Target group are ESCOs involved in technical renovation projects, focusing on coal-fired industrial boilers (furnaces), waste heat and waste pressure utilisation, oil conservation and substitution, motor system energy conservation, and energy system optimisation
Type of finance	Rewarding grants and incentivising fund
Volume, duration and status	Incentivising fund: For 2010, the central government had CNY 1.24 billion (EUR 182 million) for the allocation. 60% of the incentives are provided directly to enterprises by MOF. Duration: 2007 – 2015
Conditions	Rewarding grants: CNY 240 (EUR 35) per ton of coal equivalent (tce) savings from the Central Government and at least CNY 60 (EUR 10) per tce savings from the local governments Eligible projects (under the 12th Five Year Plan): • Energy savings: at least 5,000 tce annual savings • Annual energy consumption (before being retrofitted): at least 20,000 tce • Company operation: at least 3 years • Others: owning comprehensive systems of energy measurement, accounting and management
Source(s)	Institute for Industrial Productivity (n.d.): China – CN15. Financial Rewards for Energy-Savings Technical Retrofits. *http://iepd.iipnetwork.org/policy/financial-rewards-energy-saving-technical-retrofits*

The National Clean Development Mechanism Fund	
Implementing institution	National Clean Development Mechanism (CDM) Fund; Ministry of Finance, CDM Fund Management Centre
Description	The state council set up this national fund in 2006 to integrate government and market functions, combine fiscal and financial measures to support low carbon development in China through public private partnerships, and mobilise various sources to combat climate change. The CDM Fund is funded by national revenues from CDM projects, operating revenue, donations from domestic and international institutions, organisations and individuals, and other sources.
Target group and investments	Projects for industrial activities contributing to climate change mitigation
Type of finance	Grant and equity investment
Volume, duration and status	The Fund has allocated CNY 5.92 billion (EUR 871 million) of concessional loan to support 97 projects in 20 provinces, and leveraged CNY 31.4 billion (EUR 4.6 billion) of market capital by October 2013. SMEs had been involved in over half the projects and benefited from over half of concessional loans. Duration: 2006 - onwards.
Conditions	Interest rate: 15% (lower than benchmark rate).
Contact	China CDM Fund Management Center Address: 10th floor, China Commerce Tower, No.5 East Sanlihe Road, Xi Cheng District, Beijing, P.R. China Postal Code: 100045 Tel: 86-10-88659333, Fax: 86-10-88659222 Email: cdmfund@cdmfund.org
Source(s)	CDMFUND: About us. *http://www.cdmfund.org/eng/about_us.aspx?m=20121025100742530511* CDMFUND: Grant. *http://www.cdmfund.org/eng/about_us.aspx?m=20121025101445513541* CDMFUND: Investment. *http://www.cdmfund.org/eng/about_us.aspx?m=20121025102224013565*

CHUEE (China Utility-Based Energy Efficiency) SME Financing Program	
Implementing institution	International Finance Corporation (IFC), commercial banks and other financial institutions
Description	The CHUEE progamme was launched in 2006. During the first phase it only lent to medium and large-sized enterprises. In the second phase there is a focus on SMEs. The programme aims at: (1) supporting Chinese banks by backing partner banks' financial risk with guaranteeing loans for climate-smart energy projects. (2) helping banks build their pipelines, portfolios, and expertise in the sustainable energy finance market and assisting in assessing the risks and opportunities of the renewable energy and energy efficiency projects.
Target group and investments	Up to 7 Chinese banks supporting industries that have the highest potential for efficiency, i.e. manufacturing of chemicals, metals, minerals, and textiles.
Type of finance	Partial risk guarantee loan. The partial loan guarantee component of the mechanism included the IFC covering 75% of the risk for the first 10% of the loss (i.e., First Loss); the remaining 25% of the First Loss was borne by the commercial banks. For the remaining 90% of the loss, the IFC covered 40% of the risk, with the commercial banks bearing the remaining 60%.
Volume, duration and status	Volume: EUR 526 million Duration: 2008 – 2016 Status: In operation (yet expected to be closed soon)
Conditions	Loans by the partner banks can be offered for a maximum of 5 years. Expected energy savings are equal to or more than 15%. Eligible energy efficiency project include (but are not limited to): • Electricity demand side management; • Building energy savings; • Industry process upgrading; • Electricity saving; • Boiler renovation; • Substitution of coal/oil with cleaner fuels; • Renewable energy.
Contact	1501, China World Office 2, No.1, Jian Wai Ave., Beijing 100004, P.R. China Tel: +86-10-5860 3000 Fax: +86-10-5860 3105 Email: *wbeloe@ifc.org* Website: *www.ifc.org/chuee*
Source(s)	IISD (2014): Greening China's Financial Markets. Growing a Green Bonds Market in China: Reducing costs and increasing capacity for green investment while promoting greater transparency and stability in financial markets. Written by Sean Kidney and Padraig Oliver. IFC (n.d.): China Utility-based Energy Efficiency Finance Programme (CHUEE). *http://www.ifc.org/wps/wcm/connect/0f680e004a9ad992af9fff9e0dc67fc6/Chuee+brochure-English-A4.pdf?MOD=AJPERES* World Bank (2014): Programme Helps Reduce Energy Bills, Protect the Environment in China. *http://www.worldbank.org/en/news/feature/2014/11/12/program-helps-reduce-energy-bills-protect-the-environment-in-china*

National SME Guarantee Programme	
Implementing institution	Ministry of Industry and Information (MII) and the General Administration of Taxation
Description	The programme was launched in 2009, in the context of high requirements for energy efficiency programmes and the need for the development of SME guarantee institutions providing over the counter guarantee issue. The programme aims at increasing guarantee supports to SMEs in more than 100 cities across China. SME credit guarantee companies can enjoy a 5% operation tax exemption on their revenues from SME credit guarantee or re-guarantee business for the period of three years after having been officially recognised as a qualified company. Based on the Interim Management Methods on SME Credit Guarantee Fund announced in 2010, the MII and the General Administration of Taxation offer three types of finance support: (1) Business Subsidy: The subsidy from the government to a guarantee company may not exceed 2% of their total outstanding guarantee, while the subsidy to a re-guarantee company may not exceed 0.5% of their total outstanding re-guarantee. (2) Guarantee Fee Subsidy: SME guarantee companies may compensate the difference between the charged guarantee fee and 50% of the prime lending rate through this subsidy. (3) Capital Support: SME guarantee companies may receive the investments from the government fund, which may not exceed 30% of guarantee companies' incremental capital.
Target group and investments	SME credit guarantee institutions that fulfil the following qualification criteria: • The company has been operating for at least one year. • The company has a registered capital of over CNY 20 million (EUR 2.7 million). • The guarantee fee may not be more than 50% of the prime lending rate. • Over a period of one year, the company offers at least 70% of its total guarantee • portfolio to SMEs. • More than 50% of the company's portfolio must be dedicated to single guarantees below CNY 8 million (EUR 1 million). • The company's average guarantee amount must be below CNY 30 million (EUR 4 million).
Type of finance	Financial supports to credit guarantee companies including tax exemptions, subsidies and investments.
Volume, duration and status	There is no information available on the total volume of the scheme. The aggregated subsidy for one guarantee institution shall not exceed CNY 30 million (EUR 4 million). Duration: 2009 onwards Status: Running
Conditions	Qualifying SME guarantee companies can be exempted for operation tax for three years. After these initial three years, the exemption may be renewed if the company still fulfils the qualification criteria.
Source(s)	Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report.

Dragon Boat Project for Startup Enterprises / Emerging SMEs	
Implementing institution	Huaxia Bank
Description	In November 2009, Hua Xia Bank rolled out the Dragon Boat Small Business Financial Services aiming to offer fast and efficient quality services and customised financial solutions for small business clients.
Target group and investments	Small businesses in the wholesale market that have no centralised cashier service. Applicable to energy efficiency projects. Some specific eligibility criteria include: (1) Operation in line with government sector policy (2) Credit rating of BBB or above (enterprises with credit rates of BB or lower need to be guaranteed by governmental guarantee companies) (3) Have loan card issued by PBoC (4) Other requirements applicable to ESCOs
Type of finance	Loan
Volume, duration and status	Ongoing financing scheme
Conditions	Maximum loan amount: CNY 20 million (EUR 2.9 million) Term: 1 - 1.5 years / 0.5 - 3 years Interest rate: based on borrower credit risk (floating) Security: Loan guarantee or equipment pledge
Contact	Huaxia Bank: The Dragon Boat Program *http://www.hxb.com.cn/home/en/smallBusiness/dragon/list.shtml*
Source(s)	Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report.

China Energy Efficiency Financing (CHUEF I, II, III)	
Implementing institution	China Exim Bank, Minsheng Bank and Huaxia Bank supported by IBRD
Description	The project aims at increasing the participating banks' capacity, interest, and confidence in mainstreaming the energy efficiency financing business line. The implementation of the project has been divided into 3 phases. The first phase provided a EUR 94.2 million loan from IBRD to two Chinese commercial banks (China Exim Bank and Huaxia Bank), as well as a EUR 12.7 million GEF granted to the Chinese government for technical assistance in the field of energy efficiency. Subsequently, phase II provided a EUR 94.2 million loan from IBRD to Minsheng Bank. Phase III provided a EUR 94.2 million loan from IBRD to China Exim Bank as pilot lendings for innovative ESCOs; the focus hereby was on the building sector as the prioritised sector for energy efficiency development.
Target group and investments	Target group: Enterprises of all sizes are eligible; focus during phase III: ESCOs from the building sector Investments: renovation and rehabilitation projects for energy efficiency without using new additional physical components and systems.
Type of finance	Credit line in the form of on-lent loans and grants
Volume, duration and status	Promotion of Energy Efficiency Financing: EUR 9.3 million Energy Conservation Investment Lending: EUR 188.4 million Duration: May 2008 – December 2016 (Phase I from May 2008, Phase II from October 2010, Phase III from June 2011 onwards) Status: Ongoing
Conditions	Investment cost of the sub-project: Must be repaid no later than 10 years through the benefit from energy savings of the sub-project.
Contact	*pmo@cheef.org.cn*
Source(s)	World Bank (n.d.): China Energy Efficiency Financing. *http://www.worldbank.org/projects/P084874/china-energy-efficiency-financing?lang=en* Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report. Institute for Industrial Productivity (n.d.): *http://www.iipnetwork.org/node/469* IIP Network 2012: *http://www.iipnetwork.org/IIP-FinanceFactsheet-1-CHEEF.pdf* World Bank 2012: *https://openknowledge.worldbank.org/bitstream/handle/10986/18410/881850BRI0Live00Box385205B00PUBLIC0.pdf?sequence=1* World Bank 2015: Implementation Status & Results Repot – China Energy Efficiency Financing (P084874). *http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/EAP/2015/06/17/090224b082f426a1/1_0/Rendered/PDF/China000China00Report000Sequence010.pdf*

Little (Small) Giant Energy Conservation Loan Programme	
Implementing institution	Bank of Beijing; Financial and technical support by IFC
Description	The Bank of Beijing launched the "Little Giant" financing plan at the end of 2006, aiming at providing comprehensive and professional financing services for SMEs.
Target group and investments	Target group: SMEs that comply with the following criteria: (1) Approved two years' debt/asset ratio (2) Over two year history Investments: Projects from the following fields are eligible for financial support: • Energy Efficiency • Clean Energy Utilisation • Renewable Energy
Type of finance	Loan
Volume, duration and status	Status: Ongoing
Conditions	Max loan amount: CNY 16 million (EUR 2.4 million) Term: 3 - 5 years Security: 50% risk-sharing from IFC plus pledge of future project revenues
Contact	Bank of Beijing: Service for small and medium enterprises (SMEs). *http://www.bankofbeijing.com.cn/en2011/corporation/introduction.shtml*
Source(s)	Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report.

ESCO Guarantee Loan	
Implementing institution	Bank of Beijing, sponsored by World Bank
Description	Financing of energy efficiency projects
Target group and investments	ESCOs that comply with the following criteria: (1) ESCOs using EPC model (2) Over 6 months of operations (3) Overall debt/asset ratio less than 70% (4) Guarantee from Guarantee Company applicable to ESCOs The projects should comply with the following criteria (1) Energy Savings Projects; no Waste-to-Energy (2) >50% project revenues from energy savings (3) Environmental Impact Assessment Report (EIA) issued (4) No adverse impact on hosts' cash flow (5) projects promoting energy efficiency
Type of finance	Loan
Conditions	90% loan guarantee Loan term: 3 - 5 years Interest rate: floating based on borrower credit rating Guarantee fee: about 2%
Contact	Bank of Beijing, 19 Jianguomen Inner St, Dongcheng, Beijing, China, Telephone: +86 10 6526 2730
Source(s)	Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report.

Green Financing Scheme	
Implementing institution	China Industrial Bank; Financial support by IFC
Description	The programme was initiated with the aim to achieve an annual reduction in carbon dioxide emissions of 5 million tonnes. This is expected to have the same impact to the suspension of a 100 MW thermal power plant.
Target group and investments	Energy efficiency projects
Type of finance	Loan
Volume, duration and status	In 2006, Industrial Bank received EUR 23.5 million from the IFC for risk-sharing coverage in the green financing service. In addition, Industrial Bank made a risk-sharing agreement with the IFC, aiming at providing loans amounting to EUR 197.8 million to SMEs for energy efficiency projects.
Conditions	Maximum loan amount: CNY 40 million (EUR 5.9 million) Loan term: Less than 5 years Interest rate: floating based on borrower credit rating Risk sharing: 50% from IFC + pledge of future project revenues
Contact	Industrial and Commercial Bank of China Limited Address: No.55 FuXingMenNei Street, Xicheng District, Beijing, P.R.C Post Code:100140
Source(s)	China Daily 2011. Available at: *http://fuzhou.chinadaily.com.cn/e/2011-04/18/content_12346067.htm* Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report. NDCR (2008): IFC, Industrial bank agree loan scheme for China energy efficiency projects. *http://cdm-en.ccchina.gov.cn/Detail.aspx?newsId=4915&TId=36*

Buyers Credit for Energy Saving & Emission Reduction Equipment Suppliers	
Implementing institution	China Industrial Bank; Financial support by IFC
Description	The scheme supports SMEs in achieving energy savings and emission reductions by providing loans for the purchase of "green" equipment. Potential investments that can be financed under this loan scheme include technology upgrades and reconstruction activities, both in new and existing projects. At a floating interest rate, depending on the borrower's credit rating, a maximum loan amount of CNY 40 million (EUR 5.9 million) can be disbursed under this scheme.
Target group and investments	Target group: (1) Energy efficiency equipment buyers (2) SMEs Investments: (1) Technology upgrade energy saving projects (2) New projects or project expansion and reconstruction
Type of finance	Loan
Volume, duration and status	N/A
Conditions	• Maximum loan amount: CNY 40 million (EUR 5.9 million) • Loan term: Less than 5 years • Interest rate: floating based on borrower credit rating + finance fee • First mortgage right to the equipment • Bank deposit equal to 2-month debt service payments • Other surety forms Security: • EE equipment repurchase guarantee • 50% risk-sharing from IFC
Contact	Industrial and Commercial Bank of China Limited Address: No.55 FuXingMenNei Street, Xicheng District, Beijing, P.R.C Post Code:100140
Source(s)	Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report.

Equipment Finance Leasing	
Implementing institution	China Industrial Bank
Description	This financing product has been offered since 2010 and provides finance leasing to businesses in the fields of energy conservation and emissions reduction, finance and modern services, transportation, energy and telecommunications, metals mining, industrial equipment, and engineering machinery.
Target group and investments	(1) Lease finance companies (2) Energy efficiency projects
Type of finance	Loan
Volume, duration and status	Registered capital of CNY 2 billion (EUR 294 million)
Conditions	Maximum loan amount: CNY 40 million (EUR 5.8 million) Loan term: Less than 5 years Interest rate: floating based on borrower credit rating
Contact	Industrial and Commercial Bank of China Limited Address: No.55 FuXingMenNei Street, Xicheng District, Beijing, P.R.C Post Code:100140
Source(s)	*http://www.cib.com.cn/en/About_IB/whatxs_new/20110901.html* Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report.

The Energy Conservation and Emission Reduction Loan Programme (Phase III)	
Implementing institution	China Industrial Bank, in collaboration with IFC
Description	This programme is operated with IFC to provide financing services for energy conservation and emission reductions of SMEs. Adopting a loss sharing mechanism, the programme works like an "insurance" mechanism. Losses of SMEs from finance related to energy efficiency are partly borne by IFC. This provides a solution to the financing difficulty of many "asset-light" SMEs.
Target group and investments	Asset-light SMEs in the field of green finance that comply with the following criteria: (1) total assets less than CNY 100 million (EUR 14.7 million) (2) the total operating income was below CNY 100 million (EUR 14.7 million) in the previous year or the total number of employees was less than 300 in the previous year. Enterprises should use the loans for energy conservation and emission reduction. The energy efficiency should be greater than 15%.
Type of finance	Loan
Volume, duration and status	Volume: Between 2006 and 2010, a total of CNY 42.305 billion (EUR 5.7 billion) were provided under the energy conservation and emission reduction loan scheme.
Conditions	N/A
Contact	Industrial and Commercial Bank of China Limited Address: No.55 FuXingMenNei Street, Xicheng District, Beijing, P.R.C Post Code:100140
Source(s)	*http://www.cib.com.cn/en/About_IB/whatxs_new/20130626_1.html* Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report. Industrial Bank (2010): The Green Finance of Industrial Bank Establishes Three Main Blocks and Gains "Golden" Benefits. Retrieved 30.11.2015 from *http://www.xyyh.com.cn/en/About_IB/whatxs_new/20101223_1.html.*

Green Finance, Better Tomorrow – Industrial Bank's Financial Solutions for Sustainable Development	
Implementing institution	China Industrial Bank
Description	The bank offers both short-term and long-term financing supports with flexible repayment methods, with a focus on relieving financial burdens for energy service companies. The main source of loan repayment is the economic profits of energy savings.
Target group and investments	ESCOs
Type of finance	Loan
Volume, duration and status	CNY 1 billion (EUR 147.2 million). So far they have financed 70 projects up to the first quarter of 2013 Duration: 2006 - the first quarter of 2013
Conditions	Long-term and short-term financing modes with flexible repayment methods
Contact	Industrial Bank Co.,Ltd. Address: No.154, Hudong Rd, Fuzhou, Fujian Province, China
Source(s)	UNFCCC (n.d.): Green Finance, Better Tomorrow – Industrial Bank's Financial Solutions for Sustainable Development. *http://unfccc.int/secretariat/momentum_for_change/items/8372txt.php*

CDM Loan	
Implementing institution	Shanghai Pudong Development Bank; Financial support by IFC
Description	Qualified CDM projects, including energy savings, emission reductions, renewable energy.
Target group and investments	Target group: SMEs Investments: qualified CDM projects related to energy savings, emission reductions, renewable energy
Type of finance	Loan
Volume, duration and status	n/a
Conditions	• Maximum loan amount: CNY 40 million (EUR 5.9 million) • Interest rate: floating, based on borrower's credit rating • Security: no collateral required
Contact	Shanghai Pudong Development Bank Address: No.12, Zhongshan Dong Yi Road, Shanghai Tel: +86-21-61618888, Fax: +86-21-63232036 Website: http://www.spdb.com.cn
Source(s)	Dreessen and Wang (2012). China Energy Efficiency Financing Landscape Report.