

Ex post evaluation – China

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Sector: Financial sector (CRS code: 2403000, formal sector financial intermediaries)

Programme/Project: CO₂ reduction programme (BMZ No. 2009 67 430)*

Implementing agency: Two Chinese commercial banks



Ex post evaluation report: 2017

		Project (Planned)	Project (Actual)
Investment costs (total)	EUR million	77.5	127.3
Counterpart contribution	EUR million	15.5	64.6
Financing	EUR million	62.0	51.7
of which BMZ budget funds	EUR million	62.0	51.7

*) Random sample 2013

Summary: As part of an open programme, qualified Chinese banks were provided with long-term refinancing funds for loans to private and public agencies, who invested small sums in climate-relevant projects for public infrastructure in Chinese cities. The FC measure was financed by a reduced-interest loan to the People's Republic of China, which was then passed on to two Chinese commercial banks (programme banks). Furthermore, the programme banks received support from experienced consultants in order to establish suitable credit products for climate-relevant urban infrastructure investments. The banks also received assistance in making the necessary adjustments to their credit allocation processes, as well as in assessing the risks in suitable investment projects and in other areas relevant to sustainable programme success.

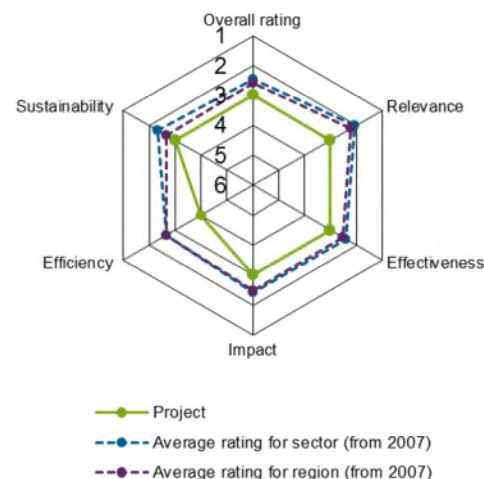
Development objectives: The aim of the FC measure was (a) to issue loans through the programme banks for smaller climate-relevant urban infrastructure investments in a sustainable, efficient and customer-oriented manner, and (b) to make public services in Chinese cities more CO₂-efficient through financial investments. The overarching developmental goal for the FC measure was to contribute to (a) advancing and propagating the Chinese financial system based on the market economy, and (b) reducing CO₂ emissions caused by public infrastructure in Chinese cities.

Target group: The project's direct target group was the two programme banks. The indirect target group was made up of private and public municipal agencies responsible for public infrastructure in Chinese cities.

Overall rating: 3

Rationale: The CO₂ reduction project addresses a relevant factor in China's further development, one which is still relevant today, and also aims to improve the financing situation in municipalities. However, during project development, the partner bank selection, the terms of financing and the conception of contracts were not sufficiently adapted in line with the programme's goals. Ultimately, this meant that not all funds were drawn down. However, this was offset by a counterpart contribution that was significantly higher than planned. Despite the fact that environmental awareness has significantly increased as a whole in China, only the FC funds provided for financing CO₂-lowering urban infrastructure projects were utilised. The planned sustainability effects (such as establishing the institutional and personnel requirements for future environmental loan financing in the banks) could not be achieved.

Highlights: ./.



Rating according to DAC criteria

Overall rating: 3

Relevance

China's current long-term development goals are defined and specified in the 13th Five-Year Plan. The Five-Year Plan for 2016 to 2020 includes a 3.2% reduction in energy intensity (energy consumption/GDP). Owing to the very poor air conditions in large Chinese cities, the Chinese government included an improvement of air quality in the current Five-Year Plan for the first time. The aim is to ensure that the air quality is good on 292 days a year (80%). To achieve both this and the aforementioned CO₂ targets, it is essential that the current energy mix of 85% fossil fuels develops towards renewable energy sources on the long run.

Based on the partner country's goals, financing packages for investments that aim to reduce CO₂ emissions in cities are tailor-made for China. The hybrid and electric buses replacing old buses and expanding urban bus networks financed primarily through the project fit in well with the Chinese government's plans. The current Five-Year Plan states that by 2020 the nearest bus stop for all residents in large cities (> 1 million residents) shall be less than 500 metres away.

The project planned to provide slightly subsidised FC funds to banks in order to give them an incentive to increase the number of CO₂-reducing (and so also more cost-efficient) environmental investments. The programme proposal (PP) stated that the lack of access to long-term financing for "clean" infrastructure projects of Chinese cities and the limited knowledge of banks about green finance were the main bottlenecks. The intervention was aimed specifically at removing these constraints. However, the main problem regarding access to finance of Chinese municipalities was not a shortage of liquidity, but rather the banks' limited understanding and interest for the specificities of this financing model.

The programme complies with sector concept for financial system development of the Federal Ministry for Economic Cooperation and Development (BMZ), but supported reducing the aforementioned core problems only to a limited extent.

Relevance rating: 3

Effectiveness

The programme objectives were defined as follows:

Indicator	Status PA, target value PA	Ex post evaluation
(1) Sub-loans are issued in full within 3 years after conditions precedent to disbursement are fulfilled.	Status PA: 0% Target value PA: 100%	84% of the committed loan volume was issued within 3 years -> Not achieved
(2) The institutional and personnel requirements to issuing loans for smaller, climate-relevant urban infrastructure investments were established at the programme banks.	Status PA: Need for personnel support Target value PA: Institutional and personnel prerequisites in place.	The prerequisites for issuing loans to smaller, climate-relevant urban infrastructure investments are only partially in place and rarely applied. -> Not achieved
(3) The non-performing loans (NPL) ratio of the programme banks' loan portfolios extended for climate-	Status PA: Results cannot be collected until implementation	- NPL ratio: 0% -> Achieved

relevant public infrastructure investments is no larger than 5%.	Target value: < 5%	
(4) Greenhouse gas emissions (measured in CO ₂ equivalent) are reduced by an average of at least 20% as a result of financed investments.	Status PA: Results cannot be collected until implementation Target value: < - 20%	- CO ₂ savings at individual infrastructure project level were between 21% and 65% (average: 31%) -> Achieved

Target indicator 1 was used to record efficient disbursement of the loan funds. The loan agreements were signed in the first half of 2012 and the final funds were disbursed in April 2015. However, it is important to consider that neither bank withdrew any further funds after the consultants' assignment was over. Ultimately, only 84% of the committed loan volume was disbursed (partner bank A: 90% and partner bank B: 69%). However, the amount of the banks' own funds used was much higher than anticipated, which in turn also showed that liquidity was not the limiting factor. Overall, indicator 1 is an input indicator and, ultimately, the majority of the credit line was used to finance urban infrastructure measures reducing CO₂ emissions. The weighting of this indicator is therefore lower.

Target indicator 2 defined the goal for staff capacity development measures. In particular, it was foreseen that the banks introduced new credit products, developed and applied suitable manuals for issuing and monitoring loans, and made sure that the corresponding sub-loans are checked and monitored by the banks' staff.

During its work, the consultant provided the banks with a great deal of support in the search for eligible infrastructure projects. Training courses for the banks' employees were also provided.

These training measures were well received at partner bank B and were often attended by the management team. However, partner bank B has yet to introduce the manuals developed (Operating Manual, Monitoring and Evaluation Reporting Scheme) as the potential new field of business is still too small (only one self-financed infrastructure financing project so far plus two more in planning).

The number of training courses held at partner bank A was much smaller. Discussions with the responsible staff of the credit departments at branch level of both partner banks revealed that staff were not familiar with the documents developed by the consultant and therefore did not apply them. The loans were issued in accordance with existing credit guidelines for large corporates, which do not require any additional environmental assessments. This implies that it is impossible to track the accompanying measures' long-term impact.

Even though the majority of the inputs were provided by the consultant, the planned outcome was not achieved.

Because the loans for financing urban infrastructure were mainly issued to municipal companies, it was to be assumed that loan repayment (**target indicator 3**) is more or less guaranteed. For this reason, this indicator was given a disproportionately low weighting during the evaluation. The expectations regarding the municipal (both individual and private) companies' good approach to repayment were confirmed during the evaluation. The awarded loans show no indication of payment delays and are currently in the repayment phase or have already been paid back.

Target indicator 4 was surpassed considerably with an average of 31% of CO₂ savings. The consultant conducted spot checks on the banks' data.

During its assignment, the consultant developed a tool for **target indicator 4**. The tool calculated CO₂ reduction in comparison to the status prior to investment and was used to assess the expected results from the individual infrastructure projects. The results of the calculation process for CO₂ reduction were summarised in the consultant's project assessment reports (PAR). For the evaluation phase, spot checks were performed on four projects (on site or at the company's local head office) to check whether the forecasted CO₂ reductions had actually been achieved. For all four projects, the actual CO₂ reductions were at the same magnitude as the forecasted figures.

The calculated and spot-checked CO₂ savings are between 21% and 65% (average: 31%) and are therefore significantly higher than the target value of 20%. This indicator is therefore deemed to be achieved.

Although the agreed loan amounts were not fully drawn down (only EUR 51.7 million instead of EUR 62 million), the two partner banks partially financed urban infrastructure projects with much higher total project volumes than assumed in the PP. Partner bank B (partially) financed an investment volume of almost EUR 24.7 million (with an FC loan in the amount of EUR 13.8 million) and partner bank A financed investments as high as EUR 102.6 million (with an FC loan in the amount of EUR 37.9 million). Partial financing of larger project volumes than expected is deemed to be positive. However, owing to the fact that a large share of the total financing volume was financed using existing state subsidies, this result should not be overstated.

Of the four target indicators defined in the PP, only indicators 2 and 4 are deemed relevant. However, only one of these two target indicators was achieved (indicator 4: CO₂ reduction) while the other was not achieved (indicator 2: institutional and personnel prerequisites for issuing credit for smaller, climate-relevant urban infrastructure investments). As a result, the effectiveness sub-section was assessed as satisfactory.

Effectiveness rating: 3

Efficiency

The budget funds used for the project were below the original calculations in the PP. Even when taking into account the fact that the loan funds were not fully drawn down, the leverage of the budget funds by the KfW loan was very good.

By using reduced-interest funds, an interest rate of 3.08% (partner bank A) and 2.95% (partner bank B) was defined for a period of 12 years in the loan contract with the Chinese Ministry of Finance. The interest rate defined in the loan contract with the Chinese Ministry of Finance was slightly below the EUR market interest rate when the contract was concluded in the first half of 2012. However, as the majority of the funds were not drawn down until the second half of 2014 (i.e. two years following conclusion of the contract) and as the euro market interest rate had fallen significantly during this period, the FC refinancing package's euro interest rate conditions were not particularly attractive for the partner banks. It is therefore unsurprising that the drawdown rate for the FC funds was so slow. The agreement of an interest rate fixation shortly before disbursement would have had a better outcome in this case.

The banks always extended financing packages for urban infrastructure in the local currency as the borrowers' financial assets also generated income exclusively in this currency. Both banks therefore had to find a solution to hedge the resulting foreign currency risks or, at the very least, reduce them. Thanks to its licenses, partner bank A was simply able to swap the euros into local RMB. As partner bank B does not hold this license, this bank had no other alternative than to invest the EUR funds on the interbank market. Due to the initially slow disbursement and the EUR interest rate, which by then had dropped even lower, a variable interest rate was selected. As a result, the bank had to bear monthly losses on interest right from the outset. Due to the prevailing negative interest rate environment, the monthly losses have since risen further, which also explains the application for the reduction to the loan amount (which has since been implemented).

The goal to ensure long-term financing of infrastructure measures through the banking sector as specified in the PP was not included in the loan contracts. As a result, long-term infrastructure projects were often ultimately financed using loans with medium terms (partner bank B 3–5 years, partner bank A even less < 3 years). The conditions for the sub-loans were almost identical to normal commercial bank loans.

The project-specific regulations for the sub-loans (in particular, the focus on small infrastructure measures < RMB 50 million and replacement investments only) were very narrow to begin with, making it very difficult and almost impossible for the banks to find suitable infrastructure projects. According to the consultant's final report, partner bank A was only able to implement a handful of the 60 original urban infrastructure projects prepared for the programme. Until mid-2014, very few funds were disbursed on account of these rigid regulations. The main reasons for this situation were discussed with the banks and the consultant. The project-specific regulations for eligible infrastructure projects were then adapted accordingly. For instance, in view of the strong economic growth in China and inflation levels, the maximum total fi-

financing volume for urban infrastructure projects was increased from RMB 50 million to RMB 150 million (at that point: EUR 18.75 million) following liaison with the Federal Ministry for Economic Cooperation and Development. Furthermore, the exclusive focus on replacement investments was expanded to include financing packages for new infrastructure projects to enable the actual CO₂ savings to be verified. Both measures are sensible from an evaluation point of view.

As the banks do not publish any information on the productivity of their staff, any evaluation of production efficiency must be based on the data available concerning the cost-income ratio. Here, both of the partner banks have good cost-income ratios of 30 to 50%.

Due to the financing of good urban CO₂-reducing infrastructure projects, the project's allocation efficiency is rated as positive.

The efficiency of the project is rated as unsatisfactory on account of the very slow disbursement of funds (also caused by the terms and conditions), the excessively low financing volume for infrastructure projects and the unsatisfactory achievement of the project goals and development objectives.

Efficiency rating: 4

Impact

The project's development objectives were (a) to advance and propagate the Chinese financial system on a market economy basis, and (b) reduce the CO₂ emissions generated by public infrastructure in Chinese cities.¹ In this case, the term public infrastructure is understood as economic or social infrastructure in cities, whereby the services are accessible to larger groups of the population. These services include energy and water supply, wastewater and waste disposal, health care, public transport systems, transport networks and areas, parks, shops, cultural and sporting venues, and public administration facilities. In principle, the project's development objectives were well selected and can be confirmed to a certain extent with the project to be evaluated.

(a) Advancing and propagating the Chinese financial system on a market economy basis

The CO₂ reduction project was positively received by the banks. There was a great deal of interest in participation in the financing programme and the training, professional development, and consultancy measures provided. The reduced-interest loans provided enabled the banks to gain initial experience with CO₂-reducing financing packages and environment-oriented calculation methods. Furthermore, bank staff gained basic knowledge of environmentally-friendly financing packages and discussed the proposed financing projects with the consultants. However, both banks are pursuing financing packages for urban infrastructure projects to only a very limited extent (if at all), meaning we can only speak of temporary proration of the product range on offer.

One small, specific impact that can be derived from the FC programme is that at least one of the partner banks involved is now much more open and experienced in the field of financing packages from green finance investments than it was before the programme was rendered. Even though green finance is still not actively used in China and only a few bank employees actually understand what green finance is, partner bank B has emphasised in multiple discussions that financing packages for green finance projects look interesting. The bank has already financed an infrastructure project itself – which was originally planned as part of the FC programme – and is currently preparing the (financing) structure for two more (district heating, hydropower station II). However, work instructions drawn up by the consultants have yet to be applied according to current information. From the FC evaluation's perspective, introduction of these instructions even later down the line is considered unlikely (see Effectiveness, target indicator 2).

In relation to the very good development of the Chinese financial sector as a whole, the long-standing presence of German FCs in the Chinese banking sector has more of an indirect positive influence. The central bank further deregulated the Chinese financial sector during the project's term. The central regulations concerning interest rates for loans were lifted as many as three years ago, thereby getting rid of the foundation for the banks' consistently risk-averse approach to credit. Now there is the option to use risk-

¹ According to current development cooperation methodology, the impact could also be defined as "Contribution to the deceleration / reduction of climate change", though this would significantly increase complexity when it comes to measurability.

adjusted loan interest rates for higher-risk loans. This shift in the paradigm was initiated at a political level but still requires more time before it is fully implemented into the banking landscape, as the evaluation determined that a large number of banks are still sticking to the lowest possible risk approach when issuing loans.

The Chinese central bank has also introduced a regular report concerning the awarding of energy efficiency loans. These reports have been requested from both partner banks but have yet to be received.

One positive development in the Chinese financial sector is the establishment of a deposit protection fund in May 2015. This fund, which was financed by the Chinese central bank, protects bank deposits of up to RMB 500,000 (around EUR 70,000) per private individual/company per bank. As a result, over 99% of investors are covered (but only 46% of all deposits at banks).

This step was an essential prerequisite for the deregulation of deposit interest rates at banks, which came into effect in autumn 2015. The deregulation of these interest rates promotes competition between banks and, in particular, competition between entities known as shadow banks and the formal banking system.

This shadow banking market grew in importance over the term of the project. For instance, innovative investment products (such as money market funds) can now be offered, asset management companies can now operate freely, and interbank transactions are permitted to take place.

The advancement / market penetration of the Chinese financial system also developed well during the project period. While just 64% of Chinese people had a bank account in 2011, this figure grew to almost 80% as early as 2014 (see the World Bank's Findex information). The share of bank account holders has risen significantly in poorer segments of the population in particular (from 46% in 2011 to 72% in 2014).

While the development objective of advancing and propagating the Chinese financial system has been achieved as a whole, the contribution made by the project under evaluation is classed as very low.

(b) Reducing CO₂ emissions generated by public infrastructure in Chinese cities

Cities play a major role in China's CO₂ emissions with 85% of the country's direct CO₂ emissions coming from cities. Around 70% of the country's total CO₂ emissions stem from 150 large Chinese cities. Of course, CO₂ emissions vary from city to city in China. In cities with lots of coal-burning power stations and cement plants (such as Tangshan in Hebei Province, Suzhou in Jiangsu Province, Baotou in Inner Mongolia and Zibo in Shandong Province), CO₂ emissions per resident are especially high.

During the course of the project, financing packages for new buses for urban transport companies emerged as the most suitable infrastructure measure. Over two thirds of the loans provided by the FC were used to finance public transport. Expanding the public transport network (as opposed to using private passenger cars) and issuing replacement investments for new buses (in contrast to the existing fleet) both significantly reduce CO₂ emissions.

The financing of the selected projects helped to achieve the development objective of decreasing CO₂ and, as a result, reducing climate change. As mentioned in the description of indicator 4, the actual CO₂ savings by far surpassed specifications in some cases.

Another suitable indicator which makes the development objective easier to measure at finance sector level is the **growth of the share of "green finance" in the banks' overall portfolios**. This indicator for the financial sector development goal was expanded for the evaluation. The central bank has required banks to calculate the proportion of green credit in their portfolios since June 2014 ("Key Performance Indicators of Green Credit Implementation", Notice No. 186 dated 27 June 2014). Furthermore, banks are also obligated to analyse their green credit implementation. As mentioned above, these reports have yet to be presented.

Based on the minor influence that the FC measure has had on financial-sector-specific and environmentally relevant developments in China, the evaluation of the impact of the programme is considered just about satisfactory.

Impact rating: 3

Sustainability

General awareness of the environment has grown considerably since the project was conceived in 2009. This is reflected both in the 13th Five-Year Plan (as described above) and in the country's signature of the Paris Agreement in late summer 2016. Furthermore, measures have already been introduced to reduce air pollution. These measures have been accepted and actively supported by parts of the population as people living in cities see and experience the effects of very poor air quality on a daily basis. New measures include heavy restrictions on the registration of new private vehicles, which can now only be "won" in a lottery-style process. The probability of getting a new private vehicle registered in Beijing is now 1:700. Electric mobility has also grown in importance in China over recent years; vehicles with combustion engines have all but disappeared from city landscapes and have been replaced by electric vehicles. These very far-reaching and positive national effects cannot really be traced back to KfW's CO₂ reduction programme; this evaluation is unable to clarify whether a very indirect chain of effects could potentially be identified.

Apart from the aforementioned reporting duties set out by the central bank, there are currently no specific requirements for the loan business at banks to support the achievement of China's environmental targets. State intervention of this kind in the sector also would not fit in with the current deregulation of the banking sector.

Far fewer training sessions took place at partner bank A, even during the course of the programme. Based on recent conversations with the bank, the impression is that the bank is not interested in pursuing this field of business further unless such investments are financed in the regular loan business.

Risks for sustainable positive effects could result from the improper handling of the financed infrastructure. However, the banks have ensured that these assets will be handled properly by applying regular credit risk monitoring (at least to a limited extent). The four infrastructure projects visited were all well maintained and in a good condition.

Whether the banks will now use the knowledge gained to finance further small-scale climate-relevant urban infrastructure investments will depend largely on demand from the bank's urban and municipal customers and on the state/municipal subsidies available.

On account of one of the partner bank's very limited interest in offering further climate-relevant urban infrastructure financing packages, the sustainability of the project is assessed as just about satisfactory.

Sustainability rating: 3

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).