



1. Project Data

Project ID

P099224

Project Name

CN-Liaoning Med. Cities (LMC) III

Country

China

Practice Area(Lead)

Energy & Extractives

L/C/TF Number(s)

IBRD-75240

Closing Date (Original)

31-Dec-2013

Total Project Cost (USD)

375,850,000.00

Bank Approval Date

27-May-2008

Closing Date (Actual)

30-Jun-2016

IBRD/IDA (USD)**Grants (USD)**

Original Commitment

191,000,000.00

0.00

Revised Commitment

165,004,115.81

0.00

Actual

165,004,115.81

0.00

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2. Project Objectives and Components

a. Objectives

The Project Development Objective (PDO) as stated in the Loan Agreement (Schedule 1, page 6) and in the Project Appraisal Document (PAD, page 5) was:

"to assist Liaoning Province in improving the energy efficiency and environmental performance of heating and gas services in the Project areas of the Project cities."

The PDO was revised under a Level 1 restructuring on January 2014 as follows:



"to assist Liaoning Province in improving the energy efficiency and environmental performance of heating services in the Project areas of the Project cities."

The assessment of the project's outcome will be based on a split rating of objectives before and after restructuring.

b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

01-Jan-2014

c. Will a split evaluation be undertaken?

Yes

d. Components

There were three components.

One. Central Heating. (Appraisal estimate US\$350.81 million. Estimate after restructuring US\$360.55 million. Actual cost at closure US\$241.30 million). This component was to cover ten subprojects aimed at rehabilitating and expanding District Heating (DH) through closing inefficient and polluting small coal-fired, heat-only boilers and through constructing and rehabilitating centralized heating systems. Activities included: (i) construction of eight large boiler plants; (ii) construction of 305 kilometers (km) of primary and about 188 km of secondary pipelines; (iii) construction of 202 new and rehabilitation of 156 group substations; and (iv) acquisition of computerized Supervisory Control and Data Acquisition Equipment (SCADA) for the sub-projects.

Two. Urban Gas Infrastructure. (Appraisal estimate US\$10.64 million. Estimate after restructuring US\$0.00 million. Actual cost at closure US\$0.00 million). This component was to comprise one sub-project in Yingkou City aimed at rehabilitation of gas transmission facilities. Activities were to include rehabilitation of the gas transmission and storage facility and the gas distribution network. This activity was cancelled and not undertaken following the Level 1 restructuring (discussed below).

Three. Institutional Development. (Appraisal estimate US\$1.22 million. Estimate after restructuring US\$1.40 million. Actual cost at closure US\$1.32 million). Activities included: (i) project management support and advisory support for the Foreign Funds Utilization Project Office (FFUPO) and heating and gas utilities; and (ii) financing of a study on safety and security measures for the Yingkou Gas Company.

Changes were made following the Level 1 restructuring on January 10, 2014: (i) Gas infrastructure



(component two) activity and four originally selected heat sub-project (component one) activities were cancelled. Shortly after loan approval, the government announced a stimulus package in the wake of the global financial and economic crisis of 2008. The bulk of this support focused on the infrastructure sector, including municipal infrastructure (such as urban heating and gas supply). Four heat sub-projects and the gas sub-project included in this project opted instead for local financing, and were therefore dropped from this project at the beginning of implementation. This resulted in cancellation of these activities; (ii) Two new heat sub-projects were added under component one; (iii) Activities associated with safety and security measures for the Yingkou Gas company were dropped because of their link to component two; and (iv) The loan proceeds freed as a result of the cancellation of the subprojects were used for financing the newly created activities.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project cost. Appraisal estimate (inclusive of total baseline cost, front-end-fee and interest cost during construction) was US\$375.85 million. Estimate after restructuring was revised downwards in view of the cancellation of activities following the Level 1 restructuring, at which point 43% of the loan had been disbursed. Estimate after restructuring was US\$377.93 million. Actual cost at closure was US\$251.22 million.

Project Financing. The project was to be financed by an IBRD loan of US\$191.00 million. The amount disbursed was US\$165.00 million. The undisbursed amount of US\$26 million was cancelled due to a combination of factors, including loan savings associated with competitive procurement, overestimation of investment needs at appraisal, and reduced scope of subprojects caused by a slowdown in housing development during implementation.

Borrower Contribution. Appraisal estimate was US\$184.85 million. Estimate after restructuring was US\$186.93 million. At closure, the borrower contribution was less than planned at US\$86.21 million.

Dates. In addition to the changes described above, the following changes were made through the restructurings: (i) The PDOs were revised through a Level 1 restructuring on January 10, 2014, and the project closing date was extended by a year until December 2014 (at this stage 43% of the loan had been disbursed); (ii) The outcome targets were revised through a Level 2 restructuring on December 19, 2014, at which point 51% of the loan had been disbursed. Two new heating sub-projects were added, and loan proceeds were reallocated between categories. The closing date was extended by an additional 18 months for completing all ongoing activities, including the newly created activities. The project closed two and a half years behind schedule, on June 30, 2016.

Restructuring and Split Rating. The assessment of the project's outcome will be based on a split rating of achievements under the original and revised objectives, weighted by disbursement of 43% before the restructuring when the PDO was revised and 57% after that restructuring. An additional "split" due to the revision of outcome targets at the December 2014 restructuring is deemed to be unnecessary, as the project largely met both the original and revised targets.



3. Relevance of Objectives & Design

a. Relevance of Objectives

Original Objective. Although poverty had declined significantly in China following the high growth experienced by the economy over the previous two decades, there were regional differences. Liaoning Province in Northeast China had hitherto been a major industrial center with state-owned enterprises, and these enterprises had mixed success with the transition to a market economy. Before appraisal, although most cities in China's coastal region (and two of the large cities in Liaoning Province) had invested heavily in urban infrastructure, urban service delivery was limited in the medium-sized cities of Liaoning Province due to the underinvestment and deferred infrastructure maintenance of the preceding years. This, alongside continued urban growth, had resulted in the deterioration of the asset base for urban services (such as heating and gas services) in the province.

The PDO was highly relevant to the Government strategy. The Government's 11th Five Year Plan for the 2006-2010 period identified energy conservation as a priority and set a target of reducing energy consumption by 20% by 2010. The plan included ten key projects to achieve its energy conservation target, and given the predominance of coal in urban heating supply, the plan measures included building energy efficiency through replacing small coal-fired boilers with environmentally efficient central heating supply. China's 12th and 13th Five Year Plans for the 2011-2015 and 2016-2020 periods further specified targets for reducing the economy's energy and carbon intensities and reducing air pollution. Specifically, the 2011-2015 and 2016-2020 plans set the target for reducing energy consumption by 20% and 18%, respectively. In July 2007, the Liaoning Province issued guidelines mandating heat-metering systems in new real estate developments after August 2007 and set a schedule for installing metering systems in existing buildings.

The PDO was also well aligned with the Bank strategy for China. At appraisal, pillar three of the Country Partnership Strategy (CPS) for the 2006-2010 period underscored the need for managing resource scarcity and addressing environmental challenges, including through reducing air pollution and optimizing energy use. The CPS for the 2013-2016 period highlighted the need for supporting greener growth.

Revised Objective. The revised objective is a subset of the original objective, focusing only on heating activities that were eventually financed by the project. The high relevance of the original objective therefore applies also to the revised objective.

Rating
High

Revised Rating
High

b. Relevance of Design

Original Design. The statement of objectives was clear, and there was a logical causal chain between project activities, their outputs, and expected outcomes. Component one activities (such as closing inefficient and



polluting small coal-fired heat-only boilers and rehabilitation and expansion of DH) in conjunction with project management support and capacity building of the participating DH heating and gas companies were intended to improve heating services. Component two activities associated with rehabilitation of the gas distribution network in conjunction with technical assistance to the Yingkou Gas Company were intended to improve gas services. The combination of these activities could be expected to contribute to the energy efficiency and environmental performance of heating and gas services in the project areas, and the intended outcomes could be expected to contribute to the higher-level objectives of managing resource scarcity and addressing environmental challenges in China.

Revised Design. With the cancellation of activities that were eventually financed through local financing, the revised design was restricted in scope and confined to activities that were financed by the Bank loan. These activities, together with the four added heating subprojects, could be expected to improve heating services, and thereby to the PDO of improving the energy efficiency and environmental performance in the project areas. The substantial relevance of the original design therefore applies also to the revised design.

Rating
Substantial

Revised Rating
Substantial

4. Achievement of Objectives (Efficacy)

Objective 1 Objective

To assist Liaoning Province in improving the energy efficiency and environmental performance of heating services.

Rationale Outputs

- Six heating sub-projects were completed before restructuring. Of the four heating sub-projects that were added following the restructuring, three were completed. The fourth heating sub-project (Chaoyang sub-project) was subject to implementation delays and was expected to be completed by August 2017.
- Primary and secondary DH pipelines, group heat substations, and heat meters were installed in the heating area. 66% of the planned number of substations were installed by project closure, as compared to the target of 100%. The shortfall was mainly due to the non-completion of the Chaoyang sub-project, which accounted for 29% of the project sub-stations. 105% of the planned number of heat meters were installed at project closure. This exceeded the target of 100%.
- 92% of the planned area in the project cities was connected to the centralized heating area, and 91.4% of the planned kilometers of pipelines were installed. The shortfall in both cases was due to the slowdown in housing construction in all cities during implementation.



- Computerized Supervisory Control and Data Acquisition (SCADA) was installed in the heating sub-projects.
- 100% of the planned capacity of boilers was installed. 89% of the planned number and capacity of boilers were replaced with centralized heating. The shortfall was mainly due to the non-completion of the Chaoyang sub-project at closure, which accounted for about 32% of the total heat generation capacity.
- 140 people were trained, exceeding the target of 135.
- One international study tour on best practices in DH was completed, and 15 local study tours were held that focused on DH technologies and project management and implementation for the heating companies.

Outcomes

- Fuel consumption per connected floor area declined from 199.5 kWh/m² at baseline to 137.9 kWh/m². This exceeded the original and revised targets of 138.9 kWh/m² and 144.9 kWh/m² respectively.
- Electricity used for DH/connected floor area decreased from 4.4 kWh/m² at baseline to 2.7 kWh/m². This met the original target of 2.7 kWh/m² and exceeded the revised target of 3.3 kWh/m².
- Make-up water used/connected floor area declined from 115.4 L/m² at baseline to 79.34 L/m². This exceeded both the original and revised targets of 96.7 L/m² and 96.0 L/m² respectively.
- Total Suspended Particulates (TSP) emissions/connected floor area declined from 0.494 kg/m² at baseline to 0.07 kg/m² at project closure, almost achieving the original target of 0.02 kg/m² and exceeding the revised target of 0.09 kg/m².
- Sulfur Dioxide (SO₂) emissions decreased from 0.28 kg/m² at baseline to 0.05 kg/m² at project closure, almost achieving the original target of 0.04 kg/m², and exceeding the revised target of 0.07 kg/m².

A household survey was conducted in seven project cities and included 426 families. About 98.6% of the respondents resided in multi-apartment buildings, and the balance lived in private family houses. The main conclusions of the survey were as follows: About 92.26% of the respondents used central heating at closure as compared to the situation in 2007, when 59% of the respondents used boilers as the method of heating and only 26.1% used central heating. 86.7% of the respondents were satisfied with the central heating services, and nearly three-fourths (73%) of the respondents noted that the quality of heating had improved since 2009.

Rating

Substantial

Objective 2

Objective

To assist Liaoning Province in improving the energy efficiency and environmental performance of gas services.



Rationale Outputs

- Activities associated with gas services were cancelled from project activities. However, these activities were to be completed using local financing.

Outcomes

- None reported.

Rating Negligible

5. Efficiency

Economic Analysis. A cost-benefit analysis was conducted for the heating subprojects, both at appraisal and at closure. This component accounted for 93% of the project cost at appraisal and about 96% of the total project cost at closure. The benefits of the project were assumed to come from cost savings associated with replacing small boilers with large boilers and central heating pipes, expanded heating supply to meet new demands, and environmental benefits. Costs included investment and operational and maintenance (O&M) costs. The weighted average of the Economic Internal Rate of Return (EIRR) of the completed heating subprojects was 16.8%, as compared to the ex ante EIRR of 22%. The main reasons for the lower ex post EIRR as compared to the ex ante EIRR were reduced project scope and heat area, higher fuel/heat prices, lower collection of heat payments from customers, and higher O&M costs.

Operational and Administrative Issues. There were operational delays due to a number of factors: delays in awarding the contract for the project management consultant, procurement complaints during implementation, difficulties associated with resolving land ownership issues for contracting a heating source and obtaining a right-of-way for a DH pipeline to cross railways, and malfunctioning of heat meters installed under the project. These, in combination with factors over which the project had either limited or no control (such as cancellation of activities due to the government stimulus package, unfavorable weather conditions including the prolonged winter season in 2015-2016, and unusually heavy rain during the summer season in 2016) contributed to the reduced scope of project activities. At closure, of the ten sub-projects envisioned under the project, nine were completed.



Efficiency Rating

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal	✓	22.00	93.00 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	16.80	96.00 <input type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

Original Objectives. Relevance of objectives to the country and Bank strategies is rated as High. Relevance of design is substantial in view of the logical causal links between the planned project activities, outputs, and intended outcomes. Improving the energy efficiency and environmental performance of heating services is rated as Substantially achieved, and improving the energy efficiency and environmental performance of gas services was Negligible. Efficiency is rated as Modest, as the ex post EIRR was lower than the ex ante EIRR, and there were operational and administrative shortcomings. Outcome is therefore rated as Moderately Unsatisfactory before restructuring.

Revised objectives. The revised objectives are essentially a subset of the original objectives, and their relevance to the country and bank strategies remained High. Relevance of design under the revised objectives is rated as Substantial, as the revised activities were restricted in scope to the activities financed by the Bank loan. Improving the energy efficiency and environmental performance of heating services was Substantially achieved. Efficiency is rated as Modest. Outcome is therefore rated as Moderately Satisfactory after restructuring.

Taking into account the ratings discussed above and weighting by the shares of disbursements before and after the first restructuring $(0.43 \times 3 + 0.57 \times 4) = 3.57$, the overall rating is Moderately Satisfactory, reflecting moderate shortcomings in the project's preparation and implementation.

a. Outcome Rating

Moderately Satisfactory

7. Rationale for Risk to Development Outcome Rating



Government ownership. Although some assets created under the project (such as pre-insulated DHs) required little by way of resources for maintenance, some activities (such as generation sources and sub-stations) require proper maintenance for ongoing benefits through the operational lifespan of equipment. It is not clear that the resources generated by the DHs will be adequate for maintaining these activities, given the lower-than-expected occupancy rate in newly constructed residential buildings, and the fact that tariffs in the past did not generate enough revenue for financing maintenance needs. Given that municipal budget transfers in China complement the revenue collected from DH customers to enable the DH companies to finance maintenance works, the government commitment risk is rated as Modest.

Technical Risk. One subproject was not complete at project closure and was expected to be completed by the 2017/2018 heating season. Given that most of the equipment under the project had been procured and only needed to be installed, the risk associated with not completing the sub-project is rated as Modest.

a. Risk to Development Outcome Rating

Modest

8. Assessment of Bank Performance

a. Quality-at-Entry

Given that the project was the first of its kind on urban heating and gas issues in China, this project was prepared based on lessons from a prior Bank-financed project in China (Heat Reform and Energy Efficiency Project) and from Bank-financed projects in countries in the former Soviet Union and Eastern Europe that had similar DH systems (Belarus Social Sector Energy Efficiency Project, Poland Geothermal District and Environment Project, Russia Municipal Heating Project, and Kiev District Heating Improvement Project). Lessons incorporated in design included activities aimed at familiarizing operators with demand-driven systems, and technical assistance activities aimed at institutional development of the DH companies. Risks identified at appraisal included substantial risks associated with the extensive coordination effort required for 11 sub-projects, and reluctance of municipalities to adjust tariffs to meet input costs. Mitigation measures, including technical assistance for project management support and annual reviews of the financial performance of companies during supervision, were incorporated at design, and the overall project risk was rated as modest. Appropriate arrangements were made at appraisal for M&E (discussed in Section 10), and for fiduciary and safeguards compliance (discussed in Section 11).

Although the risk associated with cancelling some sub-projects following the stimulus package in the wake of the global crisis of 2008 could not have been realistically foreseen at appraisal, there were moderate shortcomings. The risks associated with the lack of experience of the participating heating companies to address procurement issues was underestimated, and this contributed to implementation delays in the case of some sub-projects. The project forecasts of construction of new buildings were overestimated, and this contributed to the 8% shortfall of the area planned to be connected to centralized heating.



Quality-at-Entry Rating

Moderately Satisfactory

b. Quality of supervision

Fourteen supervision missions were carried out over an eight-year project implementation period, implying supervision missions on average twice a year. The supervision missions included all the specialists required to assess project progress. Continuity of leadership was maintained more or less, with the first Task Team Leader (TTL) transferred about three years after effectiveness and, from then, by the same TTL based in Beijing for the rest of the duration of the project. The TTL was conversant in Chinese, and this facilitated communication with project counterparts and provision of timely support. The supervision team also included a key international DH expert for overseeing financial, technical, and economic aspects from appraisal to project completion. Interventions by the supervision team during implementation helped in resolving safeguard and procurement issues (discussed in Section 11). The Borrower's ICR (page 48) reports that the Bank team provided clear guidance on how to solve issues that rose during implementation, and that the extensive trainings conducted by the supervision team facilitated project implementation.

While project implementation delays were to an extent beyond the Bank's control, more proactive interaction of the team with the Chinese provincial and central authorities during the first years of project implementation could have helped in reducing implementation delays.

Quality of Supervision Rating

Moderately Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. Assessment of Borrower Performance

a. Government Performance

The commitment of the Liaoning government and the authorities of the participating cities at preparation was demonstrated by their identification of sub-projects and provision of the required support during preparation. However, delays on the part of the provincial governments in identifying suitable sub-projects for replacement at restructuring affected the project implementation schedule. Some local governments were not actively involved in addressing and resolving land acquisition issues, and this also contributed to implementation delays.

Government Performance Rating

Moderately Satisfactory



b. Implementing Agency Performance

The Liaoning Foreign Fund Utilization Project Office (FFUPO), established under the Liaoning Provincial Development and Reform Commission (LDRC), was in overall charge of project coordination. The Liaoning Province Department of Finance (LPDF) was responsible for integrated management of the project and providing guidance to the FFUPO and the project cities, and the subprojects were to be implemented and operated by the heating and gas utilities. The performance of the Project Implementation Units (PIUs) varied, with some PIUs completing the subprojects by the original closing date, while others could not due to capacity issues.

Most of the companies did not comply with the financial covenants associated with raising tariffs to meet input costs. Better supervision and guidance on the part of the Project Management Office (PMO) could have helped in reducing the number of procurement complaints that arose during implementation, and better support could have been provided by the PMO to resolve the capacity issues of the Project Implementation Units (PIUs).

Implementing Agency Performance Rating

Moderately Satisfactory

Overall Borrower Performance Rating

Moderately Satisfactory

10. M&E Design, Implementation, & Utilization

a. M&E Design

There were six key indicators at design: annual fuel consumption, electricity use, and make-up water per square meter of connected area; emissions of Total Suspended Particles (TSP) and Sulfur Dioxide (SO₂) for connected floor area; and reduction of gas losses after the rehabilitation of the gas distribution system. Four of these indicators were appropriate for monitoring energy efficiency of heating and gas services, and the remaining two indicators were appropriate for monitoring environmental performance of heating and gas services. The key outcome and intermediate indicators had baseline data and targets. The Project Management Office (PMO) was responsible for collecting the data for monitoring performance.

b. M&E Implementation

Following the restructuring and cancellation of the activities associated with gas services, the indicator associated with reduction of gas losses was dropped. The housing development estimates at the time of appraisal were not updated during implementation, and although the slowdown in housing development facing all cities was outside the project's control, the indicator pertaining to the area planned to be connected to centralized heating was not revised during project implementation.

During implementation, the PDO and intermediate indicators were monitored separately for each heating sub-



project and then aggregated at the project level. The ICR (page 13) notes that the PDO and intermediate indicators of subprojects were not always corrected by the PMO for sub-projects during implementation. This was, however, rectified based on the updated data received by the PMO at project closure.

c. M&E Utilization

The indicators were used for identifying and addressing project issues and monitoring project performance. While the intermediate indicators were used to monitor progress with physical investment, the PDO indicators were used for monitoring performance with respect to project outcomes.

M&E Quality Rating

Substantial

11. Other Issues

a. Safeguards

The project was classified as a Category B project for environmental assessment purposes. In addition to Environmental Assessment (OP/BP 4.01), the Involuntary Resettlement safeguard policy (OP/BP 4.12) was triggered.

Environmental Assessment. The PAD (page 18) notes that full Environmental Impact Assessments (EIAs) were conducted at appraisal, an EIA report was prepared for addressing environmental impacts, and Environmental Management Plans (EMPs) in the Chinese language and Environmental Assessment (EA) summary in English were prepared and publicly disclosed (PAD, page 18). The ICR (page 14) notes that during implementation there were issues with respect to closure of small coal boilers, as the boilers were not owned by the participating DH Companies. With Bank intervention, these issues were resolved, and the municipal governments eventually took responsibility for disposing of small boilers in accordance with the EMP. The ICR (page 14) also notes that although the PMO encountered difficulties in supervising compliance with EMP of some sub-projects, these issues were resolved through hiring environmental monitoring consultants, and this helped in ensuring monitoring of environmental management of each sub-project. Compliance with environmental safeguards was deemed to be satisfactory (ICR, page 14).

Involuntary Resettlement. The PAD (page 17) notes that the project was expected to affect 956 persons from 308 households by permanent land acquisition, temporary land use, and demolition of housing. Resettlement Action Plans (RAPs) were prepared at appraisal for the project components in accordance with local laws and regulations and Bank requirements, and publicly disclosed. The ICR (page 14) notes that several of the original sub-projects involved land acquisition for construction of new heat sources. None of the four new sub-projects that were added at restructuring required land acquisition. The ICR (page 14) notes that all affected people were compensated for land acquisition and rehabilitation measures in accordance with RAPs during implementation, and that efforts were made by sub-project



sponsors to ensure redeployment of boiler workers affected by closure of small coal boilers by providing them with employment in heat supply companies.

b. Fiduciary Compliance

Financial Management. An assessment of the implementing agency conducted at appraisal concluded that the financial management arrangements of the Project Implementation Units (PIUs) met the Bank's requirements (PAD, page 16). The ICR (page 15) notes that the financial management of the implementing agency was deemed to be satisfactory during project implementation. Although there were disbursement delays, no significant issues were identified, and Interim financial reports and unqualified project audit reports were submitted in a timely fashion.

Procurement. An assessment conducted at appraisal concluded that the procurement risk was moderate (PAD, page 16). Since most of the project PIUs lacked experience with World Bank projects, the project envisaged enhancing the procurement capacity of the PIUs through training and support from the Bank office in Beijing and from supervision missions. The ICR (page 15) reports that the Bank team provided a number of procurement trainings before and during implementation. The ICR (page 15) also notes that, although all goods, works, and consultant services were procured in accordance with legal covenants and Bank procurement policy, there were procurement delays due to a number of complaints from bidders and anonymous parties about the qualification requirements and technical specifications of bidding documents. The complaints related to collusion and fraud, and some implicated the local PIUs. The ICR (page 15) notes that these issues were ultimately addressed, and the Bank team closely followed up with the Project Management Office and participating district heating companies on the procurement complaints.

c. Unintended impacts (Positive or Negative)

None reported.

d. Other

12. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Satisfactory	---
Risk to Development Outcome	Modest	Modest	---



Bank Performance	Moderately Satisfactory	Moderately Satisfactory	---
Borrower Performance	Moderately Satisfactory	Moderately Satisfactory	---
Quality of ICR		Substantial	---

Note

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons

The ICR draws the following main lessons from implementing this project, with some adaptation of language.

(1) It would be more realistic to include a smaller number of sub-projects in municipal utility sectors that include a number of participating cities. This is particularly so when investments involve multiple sub-projects, borrowers, and implementing agencies across disparate geographic locations. Concentration on fewer sub-projects could help in providing better implementation support.

(2) A careful assessment of the implementation timeline is required before making a decision as to whether to include a sub-project in a project. In the case of this project, the delays associated with finalizing sub-projects in the wake of the financial and economic crisis in China contributed to delays during implementation, and eventually one sub-project could not be completed at project closure.

(3) The country context needs to be taken into account while deciding on financial covenants, and these should be included at the utility level only when deemed to be absolutely necessary. In the Chinese context, compliance with financial covenants at the utility level depends largely on tariffs that are set by local governments often at below cost-recovery levels, for political reasons. However, local governments often provide financial support to compensate for the loss-making tariffs. Under these circumstances, non-compliance with the covenants may not affect the ability of the project utilities to implement project investments.

14. Assessment Recommended?

No

15. Comments on Quality of ICR

The ICR is concise, well-written, and provides good and thorough analysis. Given the delays that were experienced in the initial years, the ICR provides a candid accounting of the reasons for the delays that eventually led to reduction in the scope of project activities. The ICR is internally consistent, and its



assessment of ratings is consistent with OPCS guidelines. A clear exposition of M&E indicators would have been useful to a non-energy specialist.

a. Quality of ICR Rating
Substantial