

## **Annex A: Incremental Cost Analysis**

Types of Incremental Costs. This Program involves three distinct types of incremental costs to be met by GEF funds:

- (i) the costs of the TA programs -- delivered to utility, bank and EE Supplier partners, and for the utility outreach and replication program – which are additional to IFC, project partner and donor contributions;
- (ii) the amount of RSF funds required to support local FIs to lend to EE projects, in the aggregate amounts budgeted for the Program, which are expended in RSF claims;
- (iii) that portion of the Program's operations and management costs additional to IFC, Program partner and donor contributions.

Justification for GEF Funding. The first and last are typical incremental costs. The second is related to the perceived incremental risk facing FIs; addressing this cost is necessary to persuade them to move into the EE finance business, provide loans for the EE projects which the Program will prepare, and assume the associated credit risks. The need for credit enhancement is driven by the risk adverse posture of China's FIs in current financial market conditions, the lack of financing available for small and medium-size term loans, especially for SMEs, and other market barriers, discussed in Section 3.6.

IFC will use a portion of its TA funds to ensure that prudent and creditworthy loans are structured for the EE market to be developed by the Program. In addition to the RSF, other important credit enhancement features are being considered and developed in the Program design:

- integrating utility bill collections with loan payment collections,
- loan-specific debt service reserve funds,
- security interest in EE equipment,
- limited recourse from equipment supplier and the utilities vendors,
- use of solid engineering/technical analysis to prepare projects,
- use of proven EE technologies which generate energy cost savings that enhance end-users' ability to pay,
- selection of projects that provide essential energy services to end-users, which enhances their willingness to pay,
- application of project-based lending and underwriting methods, where the project savings/revenues and assets provide a primary source of loan repayment and security,
- proper credit screening and analysis of end-users/borrowers, and
- competitive bidding process by EE Suppliers to ensure that end-users receive the best pricing on equipment and services.

The RSF will only support loans for viable projects with capable end-users where business judgments are made that the loan is prudent, creditworthy and will be repaid. Thus, the RSF will help bridge the gap between (A) perceived credit risks, which as current practiced represent a barrier to lending, versus (B) real credit risks, as assessed based on the credit structures and business models to be applied by the Program.

The major justification for GEF's involvement is that in the current condition there is lack of effective, readily scalable marketing methods for EE equipment, including for gas-using end-use equipment. The use of GEF funds is justified to test and support this Program's methods for

overcoming the marketing barriers to EE equipment described in Section 3.7. The specific use of GEF funds in the Program is limited to those areas where the Program co-funders and private sector parties are unable to pay the costs. The GEF contribution is thus truly incremental and additional, and catalyzes EE project investment at a ratio of GEF funds to total EE project investments of up to 9:1 (\$16.5 million in GEF funds compared to an estimate of \$150 million in total EE project investment), while also effectively leveraging TA and operational costs with donor funding.

In addition, financial guarantees have been shown to be a very effective tool for overcoming financial barriers. Previous IFC/GEF projects, such as the Hungary Energy-Efficiency Co-finance Program (HEECP) or Commercializing Energy Efficiency Finance (CEEFF) have shown that GEF support, in the form of financial guarantees, has allowed FIs to gain experience and confidence with loans for EE investments, and as a result, has catalyzed the creation of an EE lending market.

### **Methodology for Calculating GHG Emissions Reductions Attributable to the Program**

Baseline. For the purposes of calculating GHG emissions reductions achieved by the Program, the baseline will be defined at the level of individual EE project installations. EE project baselines will be the end-user's existing system and energy consumption for a given level of delivered energy services *prior* to installation of the sub-project directly supported by the Program. Energy savings will be calculated based on the site- and application-specific energy consumption for delivering the same level of energy services *after the* EE project is installed.

GHG emissions reductions resulting from the lower carbon intensity of natural gas fuel directly substituting for other fuels, e.g., coal, in EE projects will be monitored by the Program's M&E plan because they are expected to be significant but they will be *counted and reported separately for GEF purposes and are not relied on for determining GEF cost-effectiveness*. GHG emissions reductions resulting from EE gains achieved by the EE projects supported directly by the Program will be counted. When EE projects supported directly by the Program result in electricity savings, the GHG emissions reductions associated with these electricity savings will be counted based on China's power system average carbon intensity value. Defining the baseline strictly with respect to EE projects supported is a ready and direct method for measuring Program impacts.

Preliminary Estimates. Preliminary estimates of Program GHG emissions reductions are based on the total volume of EE projects the Program will support and their estimated economics, in aggregate. On this basis, IFC estimates a range of 4.1-8.6 million tons carbon equivalent emissions reductions to be achieved. Key assumptions for one preliminary calculation are indicated in Table A-1 below, for a "base case" estimate. These assumptions are judged to be reasonably conservative. Emissions reductions in the high default case are reduced an additional 4.5%, assuming that if a loan defaults, then all savings and hence emissions reduction cease, and that the defaults occur, on average in the third year of the project life<sup>1</sup>.

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<sup>1</sup> The incremental defaults in the high default case =  $(10\% - 4\%) = 6\%$ . If defaults occur on average in year three, then the average life for defaulted projects would be 2.5 years instead of 10 years, so emissions reductions on defaulted projects would be reduced by 75%;  $6\% * 75\% = 4.5\%$ , which is the additional discounting applied to the total emissions in the high default case.

**Table A-1: Preliminary GHG Emissions Reductions Calculations, Key Assumptions**

	Key Assumption:	Value:	Comment:
1	Total investment in EE projects	\$150,000,000	key variable to test
2	Simple payback, average in years, on EE gains only	6.00	conservative estimate, as simple pay back on EE gains est. to be ~3-4 yrs
3	Annual energy cost savings, attributable to EE gains	\$25,000,000	
4	Useful life of projects, average, in years	10.00	conservative estimate, as 10-15 year useful actual life
5	Energy cost, per ton, all tons coal equivalent (TCE)	\$40.00	conservative estimate, as actual price in the \$25-30 range
6	Annual TCE savings	625,000	
7	Life cycle TCE	6,250,000	
8	tons CO2 per TCE	2.75	discounted below with co-efficient
9	total tons emissions reductions, CO2	17,187,500	
10	co-efficient, to discount	50.00%	reflecting lower carbon of energy saved, on average, compared to coal
11	adjusted value, tons CO2 emissions reductions	8,593,750	

Based on these estimates, and the Program GEF budget, GEF cost-effectiveness calculations (GEF cost per ton CO2 GHG emissions reductions achieved) can be made and are summarized below in Table A-2 Two key variables are tested: (1) the volume of projects financed, (\$150 million is the target case and \$75 million the reduced volume case), and (2) the level of loan defaults which directly effects expenditures of GEF RSF reserves (4% is the estimated case and 10%, reflecting complete expenditure of GEF RSF reserve funds, is the worst case). Thus, four cases (2 X 2) are provided, below, with the volume of projects varying in the first row, and loan default rate varying in the third row. By these calculations, each \$1 million in EE project capital investments will yield 57,292 tons of CO2 emissions reduction over their lifetime.

**Table A-2: GEF Cost-effectiveness Calculations**

GEF Cost-effectiveness Calculations	Base Case Volume and Defaults	Base Case Volume and High Defaults	Low Volume, Base Case Defaults	High defaults, Low Volume
Total EE Sub-projects implemented	\$150,000,000	\$150,000,000	\$75,000,000	\$75,000,000
GEF expenditures, excluding RSF Reserves	\$6,500,000	\$5,300,000	\$6,500,000	\$5,300,000
Actual default rate	4.00%	10.00%	4.00%	10.00%
GEF RSF Reserve expenditures	\$4,600,000	\$11,200,000	\$2,300,000	\$11,200,000
Total GEF Expenditures	\$11,100,000	\$16,500,000	\$8,800,000	\$16,500,000
Metric Tons CO2 emissions avoided by Project, estimated	8,593,750	8,207,031	4,296,875	4,103,516
GEF cost per metric ton CO2	\$1.29	\$2.01	\$2.05	\$4.02
Lifetime Tons CO2 reduced per \$1 million capital investment (Base Case)	57,292			
Added discounting of emissions reductions for high default case	4.50%			

**Range of emissions reductions = 4.1 – 8.6 million tons**

**Range of GEF costs per ton = \$1.29 to \$4.02 per ton CO2**

Refinement of these Estimates Using Data from the EE Projects. Through its work with prospective partner utilities and EE Suppliers, IFC is identifying and collecting information on initial EE projects. During Program appraisal, IFC commissioned preliminary feasibility studies for four projects identified by Xinao Gas. Because of budget limitations, these studies did not include comprehensive EE measures of the subject facilities, but rather focused on initial projects of priority interest to the end-user. The summary results of these studies are presented in Table A-3, included estimated GHG emissions reductions.

**Table A-3: Summary Results of Project Preliminary Feasibility Studies**

<b>Project</b>	<b>Huaxu Pharm</b>	<b>Hunan Wire</b>	<b>Xinaggang</b>	<b>Huiliong</b>	<b>Totals</b>
<b>End-user</b>	Hebei Huaxu Pharmaceutical Co., Ltd.	Hunan Valin Wire & Cable Co., Ltd.	Xianggang Refractory Material, Ltd.	Zhuzhou Huiliong Foreign Trade Packaging & Printing Ltd.	
<b>Location</b>	Shijiazhuang, Hebei Province	Xiangtan, Hunan Province	Xiangtan, Hunan Province	Zhuzhou, Hunan Province	
<b>Project description</b>	Hydrogen mfg. w/natural gas, substituting for electrolysis using coal-based electricity; CO2 capture for industrial use	Conversion of aluminum and copper smelting furnaces to natural gas substituting for heavy fuel oil	Conversion of refractory furnaces to natural gas substituting for asphaltum and heavy oil	Gas-fired steam boiler, replacing coal boiler	
<b>Investment cost, RMB</b>	8,400,000	9,899,700	4,686,000	1,800,000	
<b>Investment cost, \$</b>	\$1,038,319	\$1,223,696	\$579,234	\$222,497	\$3,063,745
<b>Energy savings, units</b>	electricity	heavy fuel oil	heavy fuel oil & asphaltum oil	Coal & electricity	
<b>Energy savings, TCE per year</b>	7,476	1,701	1,251	498	
<b>Annual energy cost savings, RMB</b>	3,766,816*	7,718,500	2,985,000	491,400	
<b>Annual energy cost savings, \$</b>	\$465,614*	\$954,079	\$368,974	\$60,742	
<b>Simple payback, net of operating costs</b>	2.23	1.43	1.8	3.66	
<b>Tons CO2 per year</b>	14,554	1,209	899	1,189	
<b>Tons CO2 lifetime years, 10 years</b>	145,540	12,090	8,990	11,890	178,510
<b>Extrapolation: Total project investment</b>	\$150,000,000				
<b>Total CO2, based on sample projects</b>	8,739,793				
<b>Lifetime Tons CO2 reduced per \$1 million capital investment</b>	58,265				

\* This project includes some CO2 recovery for industrial use, and these values are included.

The useful life of these projects are all on the order of 20 years, but 10 years was used to calculate their lifetime GHG emissions reductions. The lifetime tons CO<sub>2</sub> emissions reductions, per \$1 million in project capital investment, was 58,265. These results confirm the preliminary overall Program estimates.

Calculation of GHG Emissions Reductions during Program Operations. In Program operations, actual energy savings from projects will be calculated project-by-project during EE project preparation, and will be verified with one post-implementation verification. For sets of common types of smaller projects, representative sample information will be gathered, and the results extrapolated for the portfolio.

Indirect Impacts from EE Market Development. The Program has additional market development objectives, described in Section 10. The Program is expected to significantly expand and deepen the market for EE and gas equipment and commercial FIs' engagement in EE finance while also strengthening local EE firms. This Project Document attempts only to estimate the "direct benefits" generated through EE projects directly supported by the Program. In practice, additional GHG emissions reductions will be achieved *indirectly* to the extent the Program's market development objectives are met. Methodology for calculating these will be further developed during Program operations by the M&E consultant.

**Summary Incremental Cost Matrix.** A summary incremental cost matrix is provided in Table A-4: Incremental Cost Matrix.

**Table A-4: Incremental Cost Matrix**

	Baseline	Alternative	Increment
Global Environmental Benefit	0 tons CO <sub>2</sub> avoided	4.1 million – 8.6 million tons CO <sub>2</sub> avoided	4.1 million – 8.6 million tons CO <sub>2</sub> avoided
Domestic Benefit	None	Lifetime energy cost savings of \$125-250 million	Lifetime energy cost savings of \$125-250 million
<i>Expenditure items:</i>			
EE Investments(3)	None	US\$75-150 million	US\$75-150 million
GEF TA/Ops costs	None	US\$6.5 million	US\$6.5 million
Losses from the RSF (5)	0	US\$1.50-11.4 million	US\$1.50-11.4 million
Total GEF Costs	None	US\$8.0-16.5 million	US\$8.0-16.5 million

## Annex B: Program Logical Framework

### Logical Framework Matrix

The objectives listed below would enable the Program to pursue GEF strategic priorities *CC-2 Increased Access to Local Sources of Financing for Renewable Energy and Energy Efficiency* and *CC- 1 Transformation of Markets for High Volume Products and Processes*. A more detailed list of performance indicators can be found in Annex E: Monitoring and Evaluation Plan.

Objectives	Performance Indicators	Data Sources	Assumptions
<b>Program Goal:</b> <i>To reduce emissions of GHGs in the delivery of energy services in China</i> , which are achieved by EE projects implemented (i) with direct support from the Program, and (ii) through on-going EE market activities of key parties – end-users, EE equipment and service suppliers, utilities and FIs—without direct Program support.	<i>Outcomes/Impacts</i> <ul style="list-style-type: none"> <li>Measurable reduction of GHG emissions in annual and life tons CO2 equivalent for specific energy use applications where the Program has supported implementation of EE projects.</li> <li>Improved capacities of key market actors to develop, implement and finance EE projects.</li> </ul>	<ul style="list-style-type: none"> <li>Data provided through energy audits conducted by the Program partners and post-implementation monitoring of EE projects</li> <li>Official estimates through government agencies, and third party agencies and institutions</li> <li>PMO data collection resources and reports</li> <li>Published market studies</li> <li>External evaluator interviews of Program partners, particularly the FIs and utilities</li> </ul>	<ul style="list-style-type: none"> <li>Increased use of EE equipment &amp; cleaner fuel would reduce GHG</li> <li>Program partners select appropriate EE equipment for financing and can accurately calculate CO2 emissions reductions with the TA capacity building support provided by the Program</li> <li>Key market actors pursue EE projects because they have a strong economic and business proposition</li> </ul>

<p><b>Objectives:</b> Directly support development, implementation and financing of EE projects</p> <p>Indirectly develop the market for EE projects by building the capacities of key parties – end-users, EE equipment and service suppliers, utilities and FIs – to continue the Program activities outside of the Program’s financial and technical support</p>	<p><i>Outcomes/Impacts</i></p> <ul style="list-style-type: none"> <li>• Up to \$150 million in EE projects implemented as result of the application of Program methods, (“direct impacts”)</li> <li>• Capacities of EE market actors are increased, Program methods replicated and additional EE project implemented on an on-going market-basis, (“indirect impacts”)</li> </ul>	<ul style="list-style-type: none"> <li>• Data provided through energy audits conducted by the Program partners and post-implementation monitoring of EE projects</li> <li>• Official estimates through government officials, and third party agencies and institutions</li> <li>• PMO data collection resources and reports</li> <li>• Published market studies</li> <li>• External evaluator interviews of Program partners, particularly the FIs and utilities</li> </ul>	<ul style="list-style-type: none"> <li>• IFC can identify, select, train and motivate/incentivize the right Program partners to implement EE projects</li> <li>• There is an untapped market demand for economically viable EE projects, while the key market participants lack sufficient know-how and financing to develop these projects on their own accord</li> <li>• As a result of the demonstration effect of the Program in the marketplace, key parties have the interest and capacities to adopt the EE practices as promoted by the Program</li> </ul>
<p><b>Output 1:</b> Directly support development, implementation &amp; financing of EE projects with energy end-users.</p> <p>The Program, with its implementation partners, will deliver services to energy users over the full EE project development cycle. Performance indicators, outcomes and impacts reflect key activities and steps in the EE project cycle.</p>	<p><i>Outcomes/Impacts</i></p> <ul style="list-style-type: none"> <li>• Total # of end-users engaged at each stage of the project development cycle: marketing, audit, feasibility study, project development, and project implementation</li> <li>• Conversion rate of energy audits to implemented projects</li> <li>• # of EE projects implemented with direct Program support</li> <li>• # of end-users adopting new EE technologies and systems as a result of direct support from the Program</li> <li>• Total value of EE investments supported</li> <li>• Energy saved and GHG emissions avoided due to EE projects directly supported by Program</li> <li>• Improved profitability for end-users as indicated by higher gross margins and EBITDA, comparing before and after financial statements</li> <li>• Average estimated pay-back periods to end-users as indicated by energy audits are achieved</li> <li>• Comparing estimated EE savings from the energy audits to actual</li> </ul>	<ul style="list-style-type: none"> <li>• Participating FI, end-user, EE Supplier and utility records</li> <li>• PMO records</li> <li>• Local consultant or academic expert analysis</li> <li>• Data provided through energy audits conducted by the Program partners and post-implementation monitoring of EE projects</li> </ul>	<ul style="list-style-type: none"> <li>• Financing and market inefficiencies are the major barriers to end-users adopting EE equipment and systems</li> <li>• End users would be willing to assume debt and make investments once barriers are reduced; services and financing terms offered are attractive to end-users</li> <li>• Utilities, EE Suppliers &amp; FIs have sufficient incentives and know-how to deploy Program methods and utilize risk sharing financing products</li> <li>• Key parties are willing to</li> </ul>

	<p>savings achieved</p> <ul style="list-style-type: none"> <li>• % reduction in local pollutants, including airborne particulates, NOX and SOX</li> <li>• Range of end-user sectors implementing EE projects</li> </ul>		<p>share information (which will be requirement of Program participation)</p> <ul style="list-style-type: none"> <li>• Economics of EE projects are attractive for end-users to implement</li> </ul>
<p><b>Output 2:</b> Develop capacities of EE equipment and service suppliers to develop, implement and finance EE projects and replicate Program methods on an on-going market-basis.</p>	<p><i>Outcomes/Impacts</i></p> <ul style="list-style-type: none"> <li>• Sales volume increase of EE projects and services by EE Suppliers directly attributed to participation in the Network, originated through the Program's several marketing channels</li> <li>• # of EE supplier companies participating in the Network</li> <li>• Range of EE equipment and services offered; entry of new EE technologies and equipment suppliers into the China market</li> <li>• # of training hours, subjects and promotion events delivered to EE Suppliers in new marketing and equipment finance methods e.g., impact - adopting EE standards in their marketing programs</li> <li>• # of EE industry associations engaged by the Program</li> <li>• Range of EE supplier sectors involved in the Program</li> </ul>	<ul style="list-style-type: none"> <li>• PMO records</li> <li>• Data and reports collected from Program partners</li> <li>• Mid-term Program assessment of market participants to identify new actors or deployment of new technologies</li> </ul>	<ul style="list-style-type: none"> <li>• EE Suppliers will have sufficient incentives to participate in the Program</li> <li>• Capacity building is effective at organizing suppliers into a Network</li> <li>• PMO can successfully conduct RFQ and assemble information on EE Suppliers</li> <li>• Natural gas technology &amp; ancillary EE equipment and systems can be successfully combined</li> <li>• PMO can implement training and TA programs</li> </ul>
<p><b>Output 3:</b> Develop capacities of utilities to develop, implement and finance EE projects and replicate Program methods on an on-going market-basis.</p>	<p><i>Outcomes/Impacts</i></p> <ul style="list-style-type: none"> <li>• Establishment of CSCs as on-going business units of the utilities</li> <li>• # of utilities engaged directly as implementing partners</li> <li>• # of EE projects generated through utilities</li> <li>• Market penetration and success rates within target utility service areas</li> <li>• Replication of Program methods through partner utilities' service areas as indicated by # of service area CSCs participating in the program</li> <li>• Participation by an electric utility and/or district heating utility; and, PRC Government policy changes supporting their participation (e.g., system benefits charges or DSM programs adopted)</li> <li>• # of utilities contacted through outreach program and trained in Program methods</li> <li>• Increase in the # of customers of the participating utilities, particularly gas utilities</li> </ul>	<ul style="list-style-type: none"> <li>• Utility energy audit data and reports</li> <li>• PMO data collection resources and reports</li> <li>• Secondary sources reporting on market trends</li> <li>• FI data and supervision reports</li> <li>• Mid-Term Evaluations</li> </ul>	<ul style="list-style-type: none"> <li>• The incentives for a utility are aligned with the need to facilitate the purchase of the requisite equipment by their new customers</li> <li>• Utilities are incentivized to package efficiency measures with gas sales in order to penetrate the market and compete with lower cost fuels</li> <li>• Utilities have the management and technical capacity to operate a CSC and manage an energy audit program</li> <li>• Utilities see value to participate in training</li> </ul>

			programs
<b>Output 4:</b> Develop capacities of FIs to finance EE projects and replicate Program methods on an on-going market-basis.	<i>Outcomes/Impacts</i> <ul style="list-style-type: none"> <li>• Total value of loans financed, originated through the Program's several marketing channels</li> <li>• Total value of loans supported by the Risk Sharing Facility (RSF)</li> <li>• Tenor of EE loans as compared to comparable market segment loans, presently and historically (e.g., impact – 3+ year loan tenors)</li> <li>• Delivery of FI training and TA; # of bankers/staff trained, e.g., impact - adoption of innovative new credit structuring and enhancement methods and financial products adapted for the EE equipment market</li> <li>• Payment performance of loans covered by the RSF, including defaults, recoveries and final losses and RSF claims payments</li> <li>• Reduction in credit enhancement needed over time, as indicated by the total liability coverage of the RSF</li> <li>• Range of borrower sectors that received credit on attractive terms</li> <li>• # and value of EE project loans provided by participating FIs without RSF coverage</li> <li>• # of FI branch offices participating in the Program</li> <li>• # of FI's participating in the Program</li> </ul>	<ul style="list-style-type: none"> <li>• FI data and supervision reports</li> <li>• PMO data collection resources and reports</li> <li>• Secondary sources reporting on market trends</li> <li>• Mid-Term Evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• RSF will incentivize partner FIs to enter the EE equipment segment of the market</li> <li>• RSF will help FIs extend loan tenors</li> <li>• End users actually need longer term financing to enable them to make purchases</li> <li>• FIs will make sound commercial decisions with the support of the RSF</li> <li>• FIs see value to participate in training programs</li> </ul>
<b>Output 5:</b> Disseminate knowledge and information on Program experience & methods; support demonstration and replication of Program methods inside and outside of China	<i>Outcomes/Impacts</i> <ul style="list-style-type: none"> <li>• # of utilities adopting Program methods without direct Program financial support</li> <li>• # of FIs adopting Program methods without direct Program financial support</li> <li>• # of EE Suppliers arranging financing of their equipment without direct Program financial support</li> <li>• IFC replicates the Program model in other countries</li> <li>• IFC adapts this Program model to other market segments in China</li> </ul>	<ul style="list-style-type: none"> <li>• PMO data collection resources and reports</li> <li>• Secondary sources reporting on market trends</li> <li>• IFC data collection resources and reports</li> </ul>	<ul style="list-style-type: none"> <li>• Utilities and FIs will adopt the Program model without IFC's TA and RSF support because of the impact of the demonstration effect of the commercial viability of the model</li> <li>• The PMO will be able to effectively communicate the Program model to an external audience</li> <li>• IFC has the human, technical and financial capacity to launch this Program in other market segments in China and other countries without GEF support</li> </ul>

## **Annex C:**

### **Responses to GEF Council Comments to the Project Brief**

This Annex provides IFC responses to comments made from the PROGRAM Project Brief by GEF Council members from the USA, Germany, France and Switzerland. The comments are first reproduced, and are then followed by IFC responses. Sections of the Project Document that further treat each particular point are cited.

#### **1. United States Comments & IFC Response**

Assessment: Support. The additionality of the Program is clear given the booming demand for energy in China and the dependence upon less clean technologies such as coal. The sustainability is potentially high given the economies of scale that can be gained through EE. The biggest challenge is overcoming the initial reluctance of lenders to finance this type of activity. The results measurement framework seems fairly thorough.

##### *IFC Response:*

- I. *Mobilize local lenders.* IFC will structure a Risk Sharing Facility (RSF), similar in design to a partial risk guarantee, designed to mobilize and support EE equipment lending by local FIs. IFC has identified two initial local Chinese banks to participate in the RSF, and is in advanced negotiations on terms and structuring. To improve the performance of the RSF, IFC will provide technical assistance (TA) to the partner banks, including training and monitoring components, to improve credit underwriting, risk assessment, and portfolio management and reporting practices. The combination of the RSF and TA program will improve the risk profile of EE lending for the banks. The RSF helps the banks to manage the risks associated with lending to a new market segment, while the TA increases the capacities of the lenders to assess project risk and make good credit decisions. See Section 4.5 of the Project Document for more details on the RSF and the bank TA program.

#### **2. Germany Comments & IFC Response**

General Comments: The proposal is sound and reasonable. It addresses a very important issue. The efficient use of energy is one of the most important factors for a sustainable development of P.R. China. Especially, the cost effectiveness of the Program with respect to CO<sub>2</sub> emission reduction is impressive. The documentation is well-prepared; however, one of the main pillars of the Program deserves further consideration. Throughout the proposal it is assumed that gas utilities will have an inherent incentive to engage in their customers' efficient use of gas ("for gas to be competitive, gas suppliers must promote efficiency, otherwise the high price of gas makes it uncompetitive with coal..." p.2). This incentive is valid to a certain extent. However, long term experiences in international energy efficiency programmes, both in the electricity and the gas sector, have shown that the issue of "lost revenues" acts a severe barrier for utilities to engage in energy efficiency on their customers' premises. With every unit of gas not sold, utilities are losing profit contributions (in the distribution and sale of gas). In order to have an incentive to engage in energy efficiency, these lost revenues have to be over-compensated by the benefits of any engagement in this field.

In addition, international experiences have shown that the issue of free-riders has to be taken into account when designing and implementing energy efficiency programmes. Those customers that will buy energy efficient equipment regardless of a programme's intervention (=free riders)

should be taken into account in the impact assessment of the programme. In the Program's section on "Monitoring and Evaluation", some brief reference should be made to this aspect. The Program might have close links to the GTZ Project "Energy Efficiency through Modernisation of Existing Buildings, P.R. China (PN 2004.2123.0) and the GTZ Project "Energy Saving" (PN 2002.2291.9). In the latter, the "Stadtwerke Leipzig" is engaged as a partner, to which the GEF-Project Brief makes reference.

Recommendation: Changes should be made during further planning steps and during project implementation. This refers especially to situations, in which gas utilities are reluctant to engage in energy efficiency measures, e.g., due to the issue of "lost revenues". The M&E activities should be worked out in more detail and make reference to potential contributions to the Millennium Development Goals.

*IFC Response:*

- I. *Utility Lost Revenue Issue.* The utility lost revenue issue is not as relevant for China's gas distribution utilities because the current level of gas market penetration is so low. In fact, Chinese gas utilities – because their fuel is more expensive than the coal that they seek to replace in building load – must enhance their offering to include EE in order to provide a competitive product into the market. Thus, EE is needed to build load, and thus enhance revenues, for the Chinese gas utility partners with which the Program seeks to work. The Program's overriding impact for gas utilities will in fact be to help them increase their loads, sales and revenues, by helping customers, including new customers, acquire EE and gas using equipment. (See Sections 3.5 and 4.6.2.) For electric utilities, the lost revenue issue is quite material. That is why the Program does not depend upon electric utility partnerships, but will seek opportunities where lost revenues might not be the deciding factor. In China's current power short situation, power saved with one customer can often be readily sold to other customers. Investments in end-use efficiency can therefore be an important part of a power utility's overall resource plans, if implemented at sufficient scale. Further, there are many measures on the customer side of the meter which generate economic benefits for the utility including power factor correction, load management, and peak shaving. (See Section 4.6.3.) The Program budget includes funds to conduct cost/benefit analyses to identify and quantify these opportunities with prospective electric utility partners. IFC has adapted the Program to respond to the risk of limited utility uptake – as pointed out by the German Council Member – by establishing three distinct marketing channels in the program: 1) utilities; 2) vendors; 3) banks. Each of these channels can either work in partnership (as described in the original Project Brief), or independently (as elaborated in this Project Document), in order to build EE project deal flow.
- II. *Free Rider Issue.* Determining whether customers participating in the Program that buy EE equipment would have done so anyway, regardless of the Program's intervention, can be difficult to determine, and is a classic issue which experienced demand-side management evaluators must regularly address. The Program's M&E methodology will similarly need to address it. Generally speaking, while free ridership is a significant issue where subsidized products are offered in order to spur consumer purchases which otherwise would not have occurred, this is not expected to be an issue with this Program, as end-users will make investments in their own EE projects which are priced on a market basis. GEF funds will be used to address barriers to market and project development, while relying on the market to price the goods and services being offered. In utility DSM analysis, there is an issue that regulators have raised concerning "non-participants", i.e., do utility customers who do *not* participate in a DSM program benefit

from the program? Regulators require analysis to show that the answer to this question is “yes” when utilities spend ratepayer funds on DSM programs. Gas utilities are expected to spend a portion of their marketing budget on the program. This question may be raised in the context of electric utilities, particularly if funds from system benefit charges (paid by all ratepayers) are used to fund the program. The cost/benefit analyses from the utility perspective can help answer this question.

- III. *Coordination with GTZ Program.* Because of this comment, IFC has met during appraisal with GTZ in Beijing in order to fully brief GTZ staff about the Program and to identify ways to leverage GTZ investment in the development of sustainable energy technology and services in China through the Program. The GTZ pioneering work in micro-credit is of a different nature than the financial market development work in The Program, and thus of only marginal relevance here. However, GTZ’s on-going policy support work with SEPA represents an important synergy which both IFC and GTZ have agreed to exploit through on-going communication and collaboration, where opportunities emerge during the Program’s life. Similarly, GTZ’s work with industry on environmental management represents an important linkage, with the IFC Program potentially providing project finance solutions for some of the industries with which GTZ is working to identify investment opportunities. During appraisal, IFC reviewed some of the engineering studies produced by GTZ to assess the profile of such potential projects for the Program risk-sharing facility. In the utility area, GTZ’s work to promote a customer orientation (and DSM), as well as to promote a supportive regulatory environment (with guaranteed feed-in tariffs) for independent power producers (including cogeneration and renewables) presents an important synergy with the Program’s potential partnerships with electric utilities, as well as for supporting cogeneration and renewables projects which rely on off-take from regulated utilities.
- IV. *Contributions to Millennium Development Goals.* Investment in clean energy systems is not explicitly mentioned amongst the eight MDGs. However, creating a sustainable low-carbon energy economy is inextricably linked to achieving poverty alleviation, environmental sustainability and other MDGs. Addressing drivers of local air and water pollution, which can greatly improve public health, and investment in clean energy technologies are included in recommendations and actions plans to achieve the MDGs. The Program clearly contributes to both of these. Reference to the MDGs will be included in the M&E plan.

### **3. France Comments & IFC Response**

General appreciation & Favorable Opinion. The project is well within the objectives of China government, which aims to promote EE and less GHG emitting energy. The gas is seen as one of the more promising energy sources to substitute for coal, which is widely used so far. By promoting at the same time coal-using equipment retrofit to gas and EE, the project is overcoming the price barrier which makes the gas less competitive compared to coal. By providing TA to both gas utilities and equipment and services suppliers the project is improving the offer side of the market, which is so far poorly developed.

We would suggest to IFC to clarify the issues addressed below.

Synergy between the project and previously GEF funded projects in the sector: There are many activities funded by GEF so far in China in relation with the scope of the project. Some of them are related to the sector targeted in the current project (boilers, financial guarantee to

promote EE, etc. all developed by the World Bank). What are the lessons learnt from the implementation of these projects, and how to ensure that the current project is not duplicating activities already funded by the previous ones?

Rationale for financial guarantee: It is stated in the project that the banks are reluctant to provide long terms loans to industries and this situation is even worse for SMEs. So the question is more the length of the financial resource than the need of grant basis financial resource. IFC's experience is that long term soft loan to the local bank is enough to mobilize them. Has IFC compared the advantages of a financial guarantee scheme relatively to a long term soft loan, and assess which is the most suitable in this case?

Conflict of interest: IFC is a shareholder of 2 local Chinese banks. If these banks are to be involved in the project and thus receive financial assistance, how will IFC plan to manage the conflict interest, which could be raised?

*IFC Responses:*

- I. *Synergy with other Programs.* IFC has met with parties responsible for several other GEF (WB and UNDP) and other donor supported EE programs in China in the process of designing this Program, including GTZ and Francais Pour L'environnement Mondial. Lessons learned are being incorporated, for example, in the structure of the RSF and the multiple business models through which EE project investments can be marketed and originated with Program support.

*In addition*, operational coordination between programs was initiated during IFC's appraisal through meetings with the project management staff of on-going GEF-funded programs in China. (These included the World Bank ESCO program and UNDP (EUEEP) energy efficiency programs.) During these meetings, specific synergies were identified, and areas of focus were clarified to ensure maximal leverage of each of the respective programs and to avoid conflicting agendas or redundant activities. A specific and immediate opportunity for collaboration with the UNDP EUEEP program lies in that program's effort to develop a database of EE equipment and certifying quality products which meet EUEEP standards. This on-going tendering process would directly support IFC's EE Supplier Network structure; IFC will provide inputs to the development of this EUEEP certification process to ensure that the output is directly supportive of IFC's vendor network development. In addition, the IFC Program could provide a source of commercial financing for some of the companies with whom EUEEP will be signing voluntary agreements to upgrade their energy-using equipment. (Please see Section 6.7.)

- II. *Rationale for Financial Guarantee.* Soft, i.e., below market interest rate, loans have been useful to gain borrowers' attention and make EE investments. However, in China, the current market interest rates, in the range of 6-8% to end borrowers, are not judged to be a barrier to lending. Further, IFC does not generally support use of soft loan instruments out of concern for distorting the lending market. There is nothing in the Chinese financial market function that indicates that a subsidized loan for EE would spur a self-sustaining lending market and thus sufficiently leverage the GEF funds or create a sustained impact. Regulatory approval to offer a below market interest rate may also be difficult to obtain. There is plentiful liquidity in China's financial system. Thus, a funded facility (credit line) is not a response to the existing market conditions. The RSF is designed to mobilize this existing liquidity, and do so on a near-commercial basis. The tenor of loans is an issue. Even three to five year

loans will be an advantage vis-à-vis current typical market offerings. The RSF therefore supports medium-term lending. The goal is to make incremental changes to current commercial practice so that, after the Program ends, there is a commercially sustainable impact and EE lending will continue. If longer-term capital is useful (as the Chinese financial market conditions evolve), then IFC will be prepared to make such capital available in complement to this Program.

- III. *Conflict of Interest.* IFC owns small equity shares in the prospective partner banks: 1.1% ownership stake in Minsheng Bank and a 4% ownership stake in Industrial Bank. IFC's relationships with these banks and their senior management have allowed IFC to develop the bank partnerships and RSF structure in collaboration with the banks. These existing relationships will allow IFC to rapidly and efficiently appraise the banks, as required for RSF participation; IFC's investment in the RSF will significantly leverage GEF funds. There are also synergies between the TA program that will be delivered to these banks and the TA programs already underway with these institutions, e.g., on improved governance, credit risk management and SME finance. Thus, IFC views its existing relationships with these banks as a valuable asset to the Program, supportive of Program success. Such reach is particularly important in the Chinese financial market, where credit practices of many banks is substandard and thus the development of a sustainable commercial lending market is compromised. In fact, one of the key IFC objectives in supporting this Program with its own additional investment in the RSF is to enhance the capacity of the participating banks to adopt improved credit practices and thus strengthen the financial market and deepen access to finance among small and medium-sized industries for environmental investments. The size of the Program activity relative to the banks' overall operations is very small; therefore such an engagement would not be expected to have a perceptible direct impact on the banks' share values. For example, Minsheng Bank and Industrial Bank's revenues exceed US \$2.2 billion and US \$1.5 billion respectively, and are largely keeping pace with China's GDP growth rate. Currently the maximum projected amount of GEF funds allocated to the RSF for each bank over a six year period is US \$5.0 million, which could result in maximum gross interest earnings of US \$8.0 to 9.0 million, based on estimated terms, a small fraction of each bank's revenue streams. IFC is allocating about US \$150,000 per bank of GEF funds to the bank TA program, dedicated to market development and EE project origination activities, while IFC is committing US \$200,000 of TA per bank, recognizing the importance of improving the credit underwriting, risk assessment, reporting and monitoring capabilities of its clients. IFC's primary financial interest in Program operations will be to manage its RSF liabilities. IFC's motivations to undertake the Program are to invest in development of China's financial sector and achieve the environmental and developmental goals of the Program. (Please see Sections 2 and 4.5.8.) The combining of both commercial and developmental objectives are inherent to IFC's mandate, and are no different here than in other types of IFC investments and programs.

#### **4. Switzerland Comments & IFC Response**

Comments. There are three main concerns, which we would like to share:

- (1) *Limited EE marketing experience of utilities / Risk to subsidize market development for gas utilities without EE improvements:* Chinese utilities have very limited experience with marketing services "on the customer side of the meter". There is concern that the gas utilities concentrate their marketing and sales efforts on fields of activities that they are familiar with.

In this case, the project would either not trigger sufficient credits from the participating FIs or would even subsidize the market expansion of a few utilities without creating an enabling environment for end-users to increase the use of EE products and services or to substantially increase the motivation of EE Suppliers to better market their EE products and services. It should be clearly kept in mind that the project is designed to be an incubator to test, prove and draw lessons from the concept to use utilities as hubs or market aggregators to promote and disseminate EE products and services – not a vehicle to primarily increase market shares of gas utilities.

- (2) *Complex project set-up and need for co-ordination among EE projects in China:* The institutional project set-up is rather complex, with a number of participants that may not be used to the envisioned type of cooperation. In addition, the project is not the only EE project in China. There are a number of EE projects that have recently been launched or are in the process of planning or mobilization. There is a risk that the different projects overlap considerably and compete for the same financial and human resources. Effectiveness and efficiency of the project would thus be reduced. In view of the limited management capacities, especially among utilities and EE Suppliers, the management of such a project, the communication with all the stakeholders involved and the coordination with many others in the field of EE will be a very challenging job. The capacity building component, which the project includes, should therefore not be limited to issues in marketing and finance but should also give emphasis to communication and project management.
- (3) *Co-financing and sustainability of project:* Compared to other GEF-supported EE projects in China (such as the China heat reform and building energy efficiency project), the financial leverage (USD 16 million to mobilize USD 130 million) is less favorable. Moreover, the co-financing package of USD 130 million can only be mobilized if the utility partners devote considerable resources to this project and do not neglect the EE-component in their endeavors to increase gas sales. There is also concern that the financing concept chosen would not offer commercial terms that are attractive enough to potential borrowers to develop a sufficient deal flow. Taking into account these factors, there seems to be a considerable risk that the project cannot draw the expected investments and loans to develop the necessary momentum required to make the project sustainable.

Conclusions and Recommendations. GEF support for this innovative project with a market based approach and a high potential for replicability is strongly recommended. The proposal to implement the project in a country whose energy supply is still largely dependent on coal, whose energy consumption is quickly growing and whose large potential for energy and emission reductions through EE gains has hardly been tapped, is sound and reasonable. The project developers are, however, advised to undertake additional efforts to adequately address the main concerns outlined above.

#### *IFC Responses:*

- I. *Limited EE Marketing Experience of Utilities / Risk to Subsidize Market Development for Gas Utilities.* IFC shares and is mindful of the several concerns stated. Limited marketing experience of utilities on the customer side of the meter is a barrier that the Program will address; (see Section 3.7). IFC believes the Program can serve the commercial interests of the utilities *and* the developmental and environmental interests of IFC and the GEF; (see Section 3.5). Program services will be delivered to energy end-users to assist them to develop EE projects and make EE investment decisions that are in their interests; (see Section 4.4.2). The utility will be a partner in this process, but IFC, through its PMO and its engineering consultants, will be active participants, too, to help assure that Program developmental goals and end-users' interests are met. Electric and also possibly heat utility partners will be

sought, so, the Program does not focus exclusively on gas; (see Section 4.6). The Program will work with EE Suppliers to assist them to develop multiple marketing channels, not just through the utilities; (see Section 4.2).

- II. *Complex Project Set-up.* IFC shares and is mindful of the challenges associated with Program management. The IFC Program Management Office (PMO) will have a key role to coordinate Program participants, manage communications, conduct trainings, manage engineering consultants, etc. IFC has strengthened the PMO staffing plan and related budget; (see Sections 6.1 and 7.7). Recruitment of Program staff has begun. Communications and project management are high on the list of job skill requirements.

Training of utilities, banks and EE Suppliers will center on EE project marketing, development and finance origination steps, and the respective roles of each in that process. The Program will define and apply tools and systems that align with the commercial interests of the participants, so they can and will undertake and continue EE project development on their own. The interests of EE Suppliers to market are also being harnessed.

IFC is not as concerned about overlap with other EE programs in China, as the market needs and opportunities for EE in the industrial, commercial, multi-residential and institutional sectors are so extensive and varied. IFC will seek to coordinate with other EE programs, share information, and, if possible, develop operational synergies. (See Section 6.7 and responses 2.III and 3.II, above.)

- III. *Co-financing and Sustainability of Project.* IFC believes the financial leverage of the Program is quite good and compares favorably to other programs. Ten million dollars in GEF funds for RSF reserves plus \$6.5 million in Program operations and TA are estimated to leverage up to \$150 million in EE project investments; if the RSF reserves are not spent on RSF claims, the leverage will be greater. IFC believes the Program will engage and align with the utilities' interests, e.g., to build load in the case of gas utilities, and that the utilities will devote required resources to make the Program sustainable; budget discussions with the first utility partner, Xiniao, support this assessment; (please see Sections 7.2 and 8.5). Creating energy equipment loan offers that are attractive to borrowers is an essential ingredient to Program success. There is a risk that banks will not do so, (see Section 9). This issue has been a focus of discussions with banks and development of the RSF product and related credit enhancement strategies. IFC has conducted a detailed request for proposal process with banks to solicit their ideas and responses on precisely these issues; (see Section 9). IFC believes that the Program can support significant innovation – longer loan tenors, more attractive security terms, lending appetite for smaller loans, effective marketing of financial services -- that will provide attractive loan offers to energy users; (see Section 4.5.8). Overall, the main measure of Program success is the volume of EE project investments it can generate and get financed and implemented; deal flow risk is one of the greatest Program risks; (see Section 9). IFC believes the Program provides a set of tools that can overcome these risks. These tools can be further adapted based on operating experience. The market and underlying demand for EE equipment is there. Thus, IFC believes that the key to Program success is execution. Through the M&E program, IFC will assess the progress of the Program, and make changes accordingly.

**Annex D: Program Budget & Financial Plan Tables**

<b>Table D-1:</b>	<b>Budget for Use of GEF Funds</b>
<b>Table D-2:</b>	<b>Estimated Number of Utility Operating Years</b>
<b>Table D-3:</b>	<b>Total Program Budget Including Co-financing: Uses &amp; Sources of Funds</b>
<b>Table D-4:</b>	<b>Engineering Services Budget for Development of EE Projects</b>
<b>Table D-5:</b>	<b>Hypothetical EE Project Portfolio</b>

**Table D-1: Budget for Use of GEF Funds**

<b>IFC/GEF China Utility-based Energy Efficiency Finance Program</b>			
<b>Budget for Use of GEF Funds</b>			
	<b>GEF Budget Category</b>	<b>Amount</b>	<b>Breakdown</b>
1	TA & Incremental Operations Costs - Utility CSCs	\$1,100,000	
2	Utility 1		\$500,000
3	Utility 2		\$200,000
4	Utility 3		\$200,000
5	Utility 4		\$200,000
6	TA - EE Project Engineering Services	\$0	
7	TA - Program Engineering Services	\$0	
8	TA to Banks	\$300,000	
9	Outreach to Utilities and Replication	\$300,000	
10	Promotion activities, promoting Program methods		\$150,000
11	Training activities, training on Program methods		\$150,000
12	IFC incremental costs for PMO	\$3,000,000	\$500,000
			per year; 6 years
13	RSF Reserves	\$10,000,000	
14	Contingency: RSF Reserves, TA & Bank incentives	\$1,500,000	
15	Monitoring & Evaluation	\$300,000	
16	Total GEF Funds Budget	\$16,500,000	

**Table D-2: Estimated Number of Utility Operating Years**

<b>Utility Operating Years</b>	
Utility 1	6
Utility 2	4
Utility 3	3
Utility 4	3
Total Utility Operating Years	16

**Table D-3: Total Program Budget Including Co-finance: Uses & Sources of Funds**

IFC/GEF China Utility-based Energy Efficiency Finance Program								
Overall Program Financial Plan: Uses & Sources of Funds								
		Uses of Funds:	Sources of Funds:					
					Donor		End-users/	Commercial
			GEF	IFC	Co-Financing	Utilities	Customers	Lender(s)
1	TA & Operations Costs - Utility CSCs	\$4,300,000	\$1,100,000	\$0	\$0	\$3,200,000	\$0	\$0
2	TA - EE Project Development Engineering Services	\$3,250,000	\$0	\$0	\$1,650,000	\$1,600,000	\$0	\$0
3	TA - Program Engineering Services	\$250,000	\$0	\$0	\$250,000	\$0	\$0	\$0
4	TA to Banks	\$700,000	\$300,000	\$400,000	\$0	\$0	\$0	
5	Outreach to Utilities & Market Research	\$600,000	\$300,000	\$0	\$300,000	\$0	\$0	\$0
6	IFC Program Management	\$4,450,000	\$3,000,000	\$750,000	\$700,000	\$0	\$0	\$0
7	RSF Reserves	\$50,000,000	\$10,000,000	\$40,000,000*	\$0	\$0	\$0	\$0
8	Monitoring & Evaluation	\$400,000	\$300,000	\$0	\$100,000	\$0	\$0	\$0
9	Contingency: RSF Reserves, TA & bank incentives	\$1,500,000	\$1,500,000	\$0	\$0	\$0	\$0	\$0
10	Implementation of EE Projects	\$150,000,000	\$0	\$0	\$0	\$0	\$35,000,000	\$115,000,000
11	Total Uses & Sources of Funds	\$215,450,000	\$16,500,000	\$41,150,000	\$3,000,000	\$4,800,000	\$35,000,000	\$115,000,000

\*US \$40,000,000 investment in the Risk Sharing Facility is expected to be committed by IFC in March of 2006.

**Table D-4: Engineering Services Budget for Development of EE Projects**

<b>TA Budget: Engineering Services for Development of EE projects</b>		Small	Medium	Large	Very Large	
Project audit, percentage to feasibility study	60.00%	444	207	59	15	
Project feasibility study, percentage to engineering	75.00%	267	124	36	9	
Sub-project development, percentage to finance closure	75.00%	200	93	27	7	
	Estimated # Closed Projects	Per Project Audit Costs	Per Project Feasibility Study Costs	Per Project Costs: Support in Engineering Phase	Audit, Feasibility, and Engineering: Project Final. Cost Share**	Total Expenditure on Projects
Type of Projects:						
Small (\$250,000 average size)	150	\$2,000	\$3,500	\$3,500	75%	\$1,450,000
Medium (\$1 million average size)	70	\$4,000	\$7,500	\$7,500	50%	\$948,889
Large (\$2 million average size)	20	\$10,000	\$20,000	\$25,000	50%	\$777,778
Very Large (>\$4 million)	5	\$20,000	\$30,000	\$40,000	20%	\$128,157
Totals	245					\$3,304,823
**NOTE: Balance of costs will be paid for by Customer and EE Suppliers; some funds may be reimbursed to project at financial closing.						

**Table D-5: Hypothetical EE Project Portfolio**

Model Portfolio			Capital Costs (100%)		Avg. Loan Size (75% Capital Cost)		Total Loan Amount	
Project Type	Number	%	RMB millions	USD millions	RMB millions	USD millions	RMB millions	USD millions
Very Large (e.g., Factory retrofit)	5	2%	40.00	4.94	30.00	3.71	150.00	18.54
Large (e.g., cogeneration)	20	8%	16.00	1.98	12.00	1.48	240.00	29.67
Medium (e.g., commercial AC)	70	29%	6.00	0.74	4.50	0.56	315.00	38.94
Small (e.g., small boiler or AC)	150	61%	2.00	0.25	1.50	0.19	225.00	27.81
Total	245						930.00	114.96
Average Size Loan Size	RMB		3,795,918					
	USD		\$469,211					
Total Loan Amount	RMB		930,000,000					
	USD		\$114,956,737					
RMB/\$		8.09						
Loan as a % of project financing		75%						

## **Annex E: Monitoring and Evaluation Plan**

### **Management of Monitoring and Evaluation Activities**

The M&E activities will be incorporated into the Program's ongoing activities, so that data will be gathered, reviewed and analyzed on an ongoing basis, and recommendations can be made to improve Program performance. This Annex defines IFC's approach to M&E as presently planned. This M&E plan will be refined, including further elaboration of Program activities to be monitored by the PMO and an M&E contractor during the early stages of implementation.

M&E will be managed by IFC's PMO, a team consisting of:

- an independent M&E contractor, responsible for designing data gathering instruments (using as a model similar instruments designed for other IFC/GEF projects), reviewing annual data surveys, and conducting the midpoint and final process and impact evaluations;
- staff members in the PMO, responsible for gathering and tracking all available data on a regular basis, and maintaining all the files necessary for data verification and analysis;
- independent engineering contractors, working in close collaboration with the Program partners, responsible for estimating GHG emission reductions at the project level, and for verifying data gathered by the Program staff.

This team will obtain information from:

- members of the EE Suppliers' Network, on sales development and how it has been affected by the Program;
- partner FIs and RSF staff members, on lending flows within and outside the Program;
- partner utilities and the CSC staff members, on engineering and economic aspects of EE projects conducted within the Program, as well as on similar projects conducted outside the Program (for example, in service territories not covered by the Program);
- local and national government ministries, agencies and departments, on regulatory issues affecting the Program;
- industry organizations, institutions and associations, and donor supported program management teams, on industry related trends and information;
- end-users, with who projects have been implemented.

#### *M&E Hierarchy: Objectives, Outputs, Activities and Outcomes/Impacts*

The M&E is organized into four hierarchical tiers for monitoring and evaluating performance of the Program: Objectives, Outputs, Activities and Outcomes/Impacts.

The Program has two main objectives in the first tier, to:

- 1) directly support development, implementation and financing of up to \$150 million in EE projects through application of Program methods, ("direct impacts"); and,
- 2) develop the capacities of key parties -- end-users, EE equipment and service suppliers, utilities and FIs -- to develop, implement and finance EE projects and replicate Program methods on an on-going market-basis, ("indirect impacts").

The next tier of the M&E hierarchy is the Program outputs. These are organized into five categories:

*Output 1:* Implement EE projects

*Output 2:* Develop capacities of EE Suppliers

*Output 3:* Develop capacities of utilities

*Output 4:* Develop capacities of FIs

*Output 5:* Disseminate Program methods and experience and support replication

These five outputs, and a further subset of activities to achieve them, are the third tier, and are described below.

*Output 1:* Directly support development, implementation & financing of EE projects. The Program, with its implementation partners, will deliver services to energy users over the full EE project development cycle.

*Activity 1.1:* Support marketing of EE projects and Program services to energy users through utility, EE Supplier and FI partners.

*Activity 1.2:* Provide EE project engineering and development services to energy users.

*Activity 1.3:* Provide quality information to end-users on EE Suppliers & support procurements.

*Activity 1.4:* Support delivery of EE equipment financial services by FI partners through RSF, introduction of other credit enhancement methods and TA.

*Output 2:* Develop capacities of EE equipment and service suppliers to develop, implement and finance EE projects and replicate Program methods on an on-going market-basis.

*Activity 2.1:* Directly support and share costs for delivery of EE project engineering services

*Activity 2.2:* Develop EE Suppliers Network; develop and conduct RFQ process

*Activity 2.3:* Support EE Suppliers to provide quality marketing information and develop marketing capacities; educate end-users; assist EE Suppliers to develop the several marketing channels, working with utilities and FIs

*Activity 2.4:* Support EE Suppliers to arrange financing for their EE projects through FI partners

*Activity 2.5:* Conduct trainings of EE Suppliers; provide other business development services to select EE Suppliers, including recruiting new technologies to China, in partnership with local companies

*Output 3:* Develop capacities of utilities to develop, implement and finance EE projects and replicate Program methods on an on-going market-basis.

*Activity 3.1:* Recruit utility participants; conduct cost/benefit analyzes.

*Activity 3.2:* Develop business plans for utility CSCs.

*Activity 3.3:* Support utility implementation of CSCs and Program methods, through the full EE project cycle, including training, engineering services, equipment procurement and financing.

*Output 4:* Develop capacities of FIs to finance EE projects and replicate Program methods on an on-going market-basis.

*Activity 4.1:* Structure and provide RSF to partner FIs.

*Activity 4.2:* Introduce, structure and promote FI use of other credit enhancement and underwriting methods, at a detailed operational level

*Activity 4.3:* Assist FIs to market their financial services to the EE market, in collaboration with EE Suppliers and utilities; assist FIs to develop new financial products, adapted to the needs of this market

*Activity 4.4:* Provide training and other TA to participating FIs, at headquarters and branch levels, to develop credit assessment and risk management practices and marketing adapted to this Program.

*Output 5:* Disseminate knowledge and information on Program experience & methods; support demonstration and replication of Program methods inside and outside of China.

*Activity 5.1:* Support and advise utility partners on how to replicate Program methods within their service territories with minimal Program support.

*Activity 5.2:* Conduct utility outreach program.

*Activity 5.3:* Conduct training programs for all parties (as indicated above).

*Activity 5.4:* Provide inputs to appropriate PRC government and other NGO and development agencies about Program experience and methods; conduct studies to formulate policy recommendations needed to apply successful Program methods.

*Activity 5.5:* Conduct monitoring and evaluations of EE projects and Program activities; disseminate Program data, findings and lessons learned in the form of reports, industry and trade articles and case studies, and through training courses targeting non-Program participating FIs, utilities, EE Suppliers, and other EE related stakeholders and organizations.

*Activity 5.6:* Work within IFC to develop similar programs and replicate Program financial and market development methods in other countries and within China.

The final tier of the M&E hierarchy is the key performance indicators that will be measured and assessed throughout the Program. These outcomes and impacts include the following.

*For EE Projects, End-users and Local Communities*

- Energy saved and GHG emissions avoided due to EE projects directly supported by the Program
- Number of EE projects implemented and financed with direct Program support
- Number of end-users adopting new EE technologies and systems as a result of direct support of the Program
- Total value of EE investments supported by the Program
- Total number of end-users engaged at each stage of the project development cycle: marketing, audit, project development, and project implementation
- Improved profitability for end-users as indicated by higher gross margins and EBITDA, comparing ex-ante and post-ante financial statements
- Average estimated pay-back periods to end-users as indicated by energy audits
- Comparison of estimated EE savings from the audits to the actual achieved by the EE projects
- % reduction in local pollutants, including airborne particulates, NOX and SOX emissions

*For the EE Suppliers network*

- Sales volume increase of EE projects and services by EE Suppliers directly attributed to participation in the Network, originated through the Program's several marketing channels
- Number of participating EE supplier companies participating in the Network
- Range of EE equipment and services offered
- Number of EE Suppliers adopting national, regional, local or industry standards for indicating EE savings performance of equipment
- Number of training hours, subjects and promotion events delivered to EE Suppliers in new marketing and equipment finance methods (e.g., impact - adopting EE standards in their marketing programs)

- Estimated number of EE Suppliers not participating in the Program, but actively supplying equipment and services to comparable projects without direct Program financial support
- Number of EE industry associations engaged by the Program
- Range of EE supplier sectors involved in the Program

*For Utilities and CSC operations*

- Demonstration of the utility-based EE project delivery mechanisms for a range of end-user sectors and EE project types
- Establishment of CSCs as on-going business units of the utilities
- Number of utilities engaged directly as implementing partners
- Participation by an electric utility and/or, district heating utility
- Number of EE projects generated through utilities
- Market penetration and success rates within target utility service areas as indicated by the % of actually financed EE Projects to the Projects evaluated
- Replication of Program methods through partner utilities' service areas as indicated by number of service area CSC's participating in the program
- Number of utilities trained
- Number of utilities adopting Program methods without direct Program financial support
- Increase in the number of customers of the participating utilities

*For Financial Institutions and Risk Sharing Facility Operations*

- Total value of loans originated and financed through the Program's several marketing channels
- Number of EE project loan transactions
- Tenor of EE loans as compared to comparable market segment loans, presently and historically (e.g., impact – 3+ year loan tenors)
- Delivery of FI training and TA; number of bankers/staff trained, e.g., impact - adoption of innovative new credit structuring and enhancement methods and financial products adapted for the EE equipment market
- Payment performance of the loans covered by the RSF; actual losses incurred and RSF claims payments made
- Range of borrower sectors that received credit on attractive terms
- Reduction in credit enhancement needed over time, as indicated by the total liability coverage of the RSF
- Total value of loans provided by participating FI's without RSF coverage
- Number of FI branch offices participating in the Program
- Number of FIs participating in the Program
- Number of FIs adopting Program methods without direct Program financial support

*For Demonstration and Replication Impact*

- Number of utilities adopting Program methods without direct Program financial support
- Number of FIs adopting Program methods without direct Program financial support
- Number of EE Suppliers arranging financing of their equipment without direct Program financial support
- IFC replicates the Program model in other countries
- IFC adapts this Program model to other market segments in the China Market

The M&E will also include an evaluation of the Program's contributions to the Millennium Development Goals.

### **Assessing the Program's direct and indirect impacts on greenhouse gas emissions.**

#### *Direct impacts*

The Program will define mechanisms for collecting and verifying data to track emissions reductions. The PMO will:

- establish a baseline through a review of the files and calculations of energy savings estimates that were made before the EE projects were approved for financing (and which will form a part of the loan documentation);
- define the methodology to confirm actual energy savings and GHG emissions reductions achieved by projects once they are implemented;
- contract independent engineers and engineering firms to calculate the GHG emissions reductions achieved by the EE projects;
- train the CSC engineers and bank loan officers how to measure and track GHG emissions reductions as part of their standard project and loan processing procedures, including integrating the data collection into their MIS systems;
- use this post-implementation methodology to check all large or complex projects, a core sample of projects that fall into the mean and a sample of smaller EE installations to see whether the expected savings were actually achieved; and,
- summarize results in periodic reports to IFC and maintain project files for ready access and review for GEF monitoring and evaluation purposes.

In evaluating projects post-implementation, key variables may include: combustion efficiency of new boiler systems, customer energy loads, generation output of boiler systems, efficiency of end-use equipment, production data, etc. Pre-installation calculations of the baseline, i.e., energy use of the existing system prior to the project, will be used and established in the pre-installation reviews. In the case of new installations, a proxy baseline will be used based on "business as usual" practices. The methods used will be drawn from other IFC/GEF projects such as HEECP, CEEF, or the Russia Sustainable Energy Finance Program.

In order to ensure that data is properly compiled, data collection requirements will be integrated into the Risk Sharing Facility Agreement, related loan agreements and cooperation agreement between IFC and the banks, and cooperation agreements between the banks and utilities. The FI will have a natural interest in gathering equipment performance data, as part of the basis for the loan is the stream of energy savings provided by the EE equipment. Independent site visits to randomly selected projects will take place on an annual basis, to verify the data gathered.

#### *Indirect impacts*

The Program's objective is to accelerate the development of the Chinese EE market among industrial, commercial, institutional and multi-family residential customers, by using a utility partner as a delivery mechanism and to introduce marketing and transactional efficiencies into the market. While the Program can work with only a limited number of partners, it has been designed so as to be easily replicated among non-participants: The EE projects The Program supports will have a demonstration effect in the market. TA and outreach activities will further build the capacity and interest of market players to implement EE projects.

In order to gauge the extent of market transformations brought about by the Program, the M&E program will specifically examine the Program's impact among non-participants, both during and after the Program's life<sup>2</sup>. It will review EE projects undertaken by partner utilities in service territories not targeted by the Program; it will track EE lending by FIs not participating in the Program, and/or that are not supported by the Program's RSF; and will also track EE deal flows where the supplier was not directly involved with the Program. Each of these elements will be tracked over time, so as to clearly establish the impact of The Program on the development of the market. The Program will continue to build its M&E tracking capabilities to measure the indirect benefits throughout the duration of the Program. IFC recognizes the challenges of quantifying these. IFC has made a conservative estimate of "leveraged resources" and post-Program impacts; total leveraged resources may actually be much larger than IFC's current estimate of US \$ 60 million.

*Mid-Term evaluation: assessing the effectiveness of the Program's design and implementation.*

THE PMO will conduct a mid-term evaluation that involves a review of, and an opportunity to update, the key assumptions underlying the Program design and structure. The mid-term review will evaluate whether the Program is achieving the targeted objectives, and if not, will provide a feedback mechanism to the Program management team to enable them to make changes in design and delivery to improve overall performance.

Some key questions are: Is the Program effective in achieving its desired market impact and how is it doing it? Are the partner utilities understanding and performing their roles as expected? Is the EE Suppliers Network functioning as expected? Is the Program's risk sharing product effective in motivating FIs to increase their EE finance activity? Are the TA products well defined and effective in achieving their stated purpose to facilitate EE equipment financing transactions? Are there changes to the Program's structure that would make it more effective? What lessons for EE finance and EE project and business development are being gained? Is the Program effective in communicating and making available these lessons and experience to non-participants? What strategies should the Program be considering to maximize its indirect impacts and demonstration value? Are the Program's environmental, economic, and social benefits likely to continue post-Program?

The mid-term evaluation will also review management, administration, budget status and cost control in order to assess their effectiveness and, if necessary, make mid-course improvements.

As part of the mid-term evaluation, an external evaluator will conduct structured interviews with:

- Program staff and management;
- Staff from utility partners, particularly the CSC
- Staff from members of the EE Suppliers Network
- Staff from selected end-users who have implemented EE projects,
- Staff from participating FIs, and from the RSF.
- Relevant Government officials and EE NGOs, including those participating in the Program Advisory Committee;

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<sup>2</sup> The resources leveraged in the market by actors not directly benefiting from GEF funds will comprise the "leveraged resources" identified in the Executive Summary, Financing Plan. See Annex C: Co-financing Policy for GEF Projects, found at: [http://thegef.org/Operational\\_Policies/Eligibility\\_Criteria/templates.html](http://thegef.org/Operational_Policies/Eligibility_Criteria/templates.html)

- Interviews with any prospective Program participants who have investigated the Program but for whatever reason, failed or declined to participate; and
- Interviews with any other stakeholders who are identified.

A final impact evaluation will also be conducted at the end of the Program. Whereas the mid-term evaluation will primarily serve to identify any difficulties and suggest mid-course corrections, the final impact evaluation will emphasize lessons learned. Its conclusions on which Program elements were most effective will be widely disseminated in China and abroad.

## **Annex F: Response to GEF Secretariat Comments Expected to be Addressed for CEO Endorsement**

This Annex provides IFC responses to comments from the CHUEE Project Brief by the GEF Secretariat on topics which the Secretariat expects to be addressed as requirements for CEO endorsement. The comments are first summarized, and are then followed by IFC responses; sections of the Project Document that further treat each particular point are cited.

### **Incremental Cost Analysis (Annex A)**

1. Elaborate on the typical project in terms of energy savings (\$ and energy units) and link the analysis to the preliminary GHG emissions reduction calculation.

*IFC Response:* The Program is expected to support a broad range of EE project types. Gas-using equipment includes: boilers, kilns, smelting, air conditioning, heating, refrigeration, industrial process equipment, and cogeneration. Electric using equipment includes efficient motors, variable speed drives, power factor correction, heat pump, HVAC, load management, controls, and lighting and other equipment. IFC has collected information on many projects during the course of market research, mainly to understand the economics of typical projects and confirm that there are economic projects in the market. While this information on specific projects is uneven and incomplete, in general, these research results have been very positive, and other general market information from active participants -- engineers, EE equipment companies, utilities, government agencies, staff from other EE development programs -- confirm the strong economics and demand for EE equipment and related finance. IFC expects that EE project sizes will range from 500,000-1 million RMB (\$60-125,000) at the small end to 16-40+ million RMB (\$2-5 million) at the large end, with an average size expected in the range of 4 million RMB (\$500,000) and typical simple payback periods of 2-4 years.

To get more specific and reliable information, IFC, as part of the Program appraisal, commissioned preliminary feasibility studies for several projects identified by Xinao Gas. Five studies were completed, four for retrofits and one for a new construction application. The summary results of these studies are presented in Annex A, Table A-3, and include estimated investment costs, energy savings in tons of coal equivalent and estimated GHG emissions reductions. Because of budget and time limitations, these studies did not include comprehensive EE measures of the subject facilities, but rather focused on initial projects of priority interest to the end-user. In practice, the Program will promote more comprehensive EE projects that should achieve greater savings and economies for the energy user.

This sample is very small, but the results, in aggregate, confirm the preliminary analysis of the preliminary. For these sample projects, the "lifetime" tons CO<sub>2</sub> emissions reductions, per \$1 million in project capital investment was 58,265. The useful lives of these projects are all on the order of 20 years, but 10 years was used to calculate their lifetime GHG emissions reductions. In the IFC preliminary GHG calculations, the lifetime tons CO<sub>2</sub> emissions reductions per \$1 million in EE project capital investment was 57,292. Thus, the sample projects confirm the preliminary overall Program estimates made by IFC. (Please see Annex A for more details on the Incremental Cost Analysis)

2. Clarify how fuel switching is treated and energy savings are calculated in Table A-1.

*IFC Response:* In the preliminary calculation, fuel switching is not treated directly, but rather indirectly through the assumptions used to grossly calculate energy savings to be achieved by

EE projects supported by the Program. It is assumed that the simple payback period on EE projects will be six years. This is a high value; actual values are expected to be in the range of 2-4 years. This high value is chosen to be conservative, and to reflect energy cost savings from EE gains only, and in order not to incorporate any cost savings due to fuel switching. Using the simple payback figure of six years, the value of energy cost savings from a given amount of EE project investments can be readily calculated. The estimated value of total EE project investment is \$150 million. Assuming a value of \$40 per TCE energy costs, then annual TCE savings = 625,000 for the whole \$150 million EE project portfolio. To reflect varying carbon intensities of different energy types (per unit of energy value) the CO<sub>2</sub> equivalent of this TCE quantity is discounted by 50%. (See Annex A for a more detailed description of the incremental cost analysis.) These are gross calculations, but reflect a general framework for assessing EE projects. In practice, costs per different types of energy vary per energy unit as do carbon intensities, and these values will be used in project-specific calculations.

Further, GHG emissions reductions resulting from the lower carbon intensity of natural gas fuel directly substituting for other fuels, e.g., coal, in EE projects will be monitored by the Program's M&E plan because they are expected to be significant *but they will be counted and reported separately* for GEF purposes. GHG emissions reductions resulting from EE gains achieved by the EE projects supported directly by the Program will be counted and will be the basis for determining GEF cost-effectiveness.

### 3. Will loan default affect emissions calculations?

*IFC Response:* This is a good question. In practice, IFC estimates the default rate to be 4%. This number is based on an estimate of the average ratio of non-performing loans for the higher echelon of private Chinese banks. The projected initial partner banks, both private, Minsheng Bank and Industrial Bank report non-performing loans of 1.4% and 2.5% respectively. However, many analysts estimate that the average ratio of non-performing loans for Chinese banks in this category is actually higher, possibly 4% to 8%.

If a loan defaults it may be that the end-user goes out of business; then, its energy loads will fall, possibly to zero, and there will be no resulting savings. (In many cases, a loan default will not reduce energy savings as the building or facility in which the EE project investment was made will continue to operate even if the original borrower is no longer using the facility. So, the correlation will not be direct and could only be determined case-by-case.) Assuming (i) that all that if a loan defaults then all savings and hence emissions reduction cease, and (ii) that the defaults occur, on average in the third year of the project life, then: emissions reductions in the high default case would be reduced an additional 4.5%. This additional discounting is reflected now in the GEF cost-effectiveness calculations. (Please see Annex A, Table A-2, and also Section 7.12.1, Table 2. Thus, loan defaults will likely reduce energy savings and hence emissions reductions, though IFC believes that the impact on Program performance would be marginal.

### Equipment Suppliers

### 4. Elaborate on involvement of industry associations. Consider involvement of relevant standardization and certification bureaus.

*IFC Response:* Associations are an important point of contact with EE Suppliers, to identify EE Suppliers, to disseminate information on the Program, and to represent the concerns of

their respective membership on market and Program advisory matters. IFC has had contact with the National Electric Equipment Manufacturers Association, and the National Gas Equipment Manufacturers Association and the Energy Management Company Association (EMCA). IFC has conducted interviews with individual EE supplier companies and also roundtable meetings with groups of EE Suppliers. These associations were contacted and provided a point of communication to solicit attendees for these meetings. The research needed to establish the EE Suppliers Network has not yet been undertaken thoroughly and will be conducted at the beginning of Program operations. Further relevant industry associations will be identified as part of this process and IFC intends to develop relationships and work with them to the fullest extent possible to promote and meet common objectives.

Regarding agencies responsible for setting EE standards for energy end-use equipment and testing and certifying such equipment, IFC has engaged in discussions with the Energy Conservation Information Dissemination Center (ECIDC), a unit of the Energy Research Institute which in turn is part of the National Development Reform Commission, the main PRC government agency responsible for economic development planning. The ECIDC was founded in part with funding from the World Bank Energy Conservation Phase I Program. ECIDC has a national reach, a mandate as part of the NDRC. Further, the ECIDC has already prepared 70+ case studies of EE projects and technical guidelines for a range of equipment and systems (e.g., motors, boilers, process systems). ECIDC contracted with a range of Research & Design Institutes to prepare these guidelines. There are many design institutes and related organizations, e.g., National Gas-fired Appliance Efficiency Testing Center, in Tianjin. There are also provincial level Energy Conservation Supervision Centers which have studied many EE technologies, and these can provide important points of contact for information dissemination.

Based on IFC's discussions with ECIDC, IFC believes that the ECIDC can provide a point of contact with the many research and design institutes and testing centers which set efficiency standards for and certify energy using equipment and also be one means of disseminating Program information and case studies as part of the outreach program. This relationship will be further developed in Program operations and budget funds for engaging ECIDC, while limited, can come from the outreach program budget and/or contingency.

5. Discuss the process for qualifying equipment suppliers and selecting EE technologies and how the Program will assure that gas equipment used is the most efficient possible, reflecting best available technology.

*IFC Response:* The IFC PMO will conduct a Request for Qualifications (RFQ) process to solicit information from equipment and service providers. The resulting information will be screened and compiled and made available to utilities and end-users. The RFQ will solicit information in the formats IFC recommends be provided to prospective customers that emphasize customer economics and energy savings benefits. Information will be sought from equipment and service companies on: their products and services, specifications on their equipment, equipment track record, equipment efficiency over a range of operating patterns and in system configurations, reference projects and case studies including sample project economics from the customer's viewpoint, their response to proposed Program business terms, including willingness to pay small fees (2%) for the finance mechanism, provide remarketing/repurchase commitments for their equipment, extended equipment warranties and performance guarantees, co-marketing activities with utilities and banks, etc. The RFQ will also explain the Program and outline TA services the Program can offer. (See Project Document, Section 4.4.)

IFC does not intend to do or fund equipment testing and certification as part of the Program but IFC must become conversant with the relevant standards, and will collect information from equipment suppliers concerning their compliance with relevant standards.

IFC must remain neutral in the marketplace concerning any specific equipment supplier, but IFC will use its TA program, engineering services, and other tools to promote customer selection of best available technologies. The Program's role is to provide thorough information to customers on energy savings benefits of various energy equipment and system options. The Program will educate customers to make their purchases based on life-cycle and energy operating costs, not just lowest acquisition costs. Customers will then make their equipment purchase decisions on a market basis.

While customers will make their own purchase decisions, IFC must also define eligible equipment for the Risk Sharing Facility Agreement (RSFA). An attachment to the RSFA will include an extensive list of energy equipment covering a range of equipment types, from boilers, motors, industrial process, cogeneration, heat recovery, refrigeration, heating and cooling systems, etc. This list will be added to during Program operations. The EE projects which are supported by the RSF will also be subject of independent engineering reviews supported by the Program which will give IFC an opportunity to confirm that projects meet minimum efficiency standards as defined by relevant Chinese agencies and design institutes. While minimum standards will be applied to suppliers in the open Network, the Program will promote applications and projects that exceed the standards through customer education and providing good information to customers on system efficiency and economics of project/technology packages.

The RFQ process can be conducted at the beginning of the Program, and repeated thereafter as a marketing tool. Further, the Network will be open, so customers who want to choose equipment outside the Network can do so, but, for the RSF, IFC would still need to qualify the equipment in IFC technical reviews. Thus, new equipment suppliers can enter the Network as part of the loan application process.

#### Arrangements with FI Partner and Guarantee Facility

6. Finalize and elaborate on the arrangement with an FI partner or partners for the guarantee facility, including its terms and structure.

*IFC Response:* IFC examined a range of options for structuring a credit enhancement or guarantee product. These options were described in the Project Brief. During appraisal, IFC has concluded that IFC can offer a RSF to participating banks. The term "Risk Sharing Facility" has been adopted rather than a guarantee to avoid invoking certain China financial regulation concerning guarantees and foreign exchange transactions, but, essentially, the RSF acts like a guarantee. This approach, having IFC offer the RSF, has avoided the need to form a new guarantee entity and also explain the financial strength of any new entity to the banks. Banks readily understand IFC's "AAA" creditworthiness. Further, IFC is seeking to support the RSF with an investment of its own of approximately \$40 million, thus leveraging GEF funds and allowing the Program to support more EE project investments and offer expanded risk coverage to participating banks.

The terms and structure of the RSF and the overall EE equipment loan mechanism are described thoroughly in the Project Document Section 4.5 and will not be repeated here. IFC has conducted a "request for proposal" process with banks to solicit proposals for equipment

loan financial services and facilitate detailed discussions about the RSF. These discussions are well advanced but the RSF Agreements have not been finalized. The IFC appraisal of its RSF investment occurred in January 2006. The initial negotiations over the terms of the RSF term sheet were carried out during this appraisal. Thereafter, IFC will complete preparations and negotiation of the RSF Agreement with the banks.

#### Cooperation WB/GEF Program

7. Provide further results of discussions with the World Bank and China National Investment & Guarantee Company (I&G) regarding substantive collaboration between the two GEF-supported EE projects and guarantee facilities.

*IFC Response:* IFC is thoroughly familiar with the terms of the guarantee program offered by I&G as part of the WB China Energy Conservation Phase II Program. This program only provides guarantees on loans where the EMC is the borrower and does *not* provide guarantees on EE project loans made to end-users. IFC has provided a briefing to I&G management responsible for the EMC loan guarantee program on the development and status of the Program; I&G has expressed interest in learning about and considering providing loan guarantees on projects generated by the Program where EMCs are borrowers. This coordination is possible, though the commercial interests of the Program partner banks must be considered. These banks are also eligible to participate in the I&G program, so the point of practical implementation will be on the part of participating banks. IFC will facilitate this coordination and information flow during Program operations.

IFC has solicited and World Bank has provided on-going inputs to IFC on development of The Program concerning the China EE market and operational issues. IFC has also been in contact with the EMC Association, which is an important part of the WB China Energy Conservation Phase II Program. The EMCA members have been contacted and provided brief information about The Program and this association will be a further point of contact with them during Program operations. Further, at the reference of the WB, IFC has been in discussions with the Energy Conservation Information Dissemination Center (ECIDC) which is a unit of the Energy Research Institute which in turn is part of the National Development Reform Commission, (see above, item 4). IFC is grateful for these inputs and, the Program, is building on the value and institutions created by prior WB efforts. IFC expects the exchange of information with the WB to continue throughout Program start-up and operations and will pursue operational involvement of ECIDC, EMCA and I&G in Program operations.

#### Letters of Commitment from Bi-lateral Donors

8. Provide letters of commitment from bi-lateral donors and other co-financiers.

*IFC Response:* See Annex G: Government of the Republic of Finland Donor Commitment, Ministry of Trade and Industry

## Annex G: Government of the Republic of Finland Donor Commitment, Ministry of Trade and Industry

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10 January 2006

Ms. Shilpa Patel  
Manager  
Environmental Finance Group  
International Finance Corporation  
2121 Pennsylvania Ave NW  
Washington DC, 20433  
Fax. 1-202-974-4800

### CHINA UTILITY BASED ENERGY EFFICIENCY FINANCE PROGRAM (CHUEE)

Dear Ms. Shilpa Patel:

The Ministry of Trade and Industry (MTI) of Finland is pleased to confirm its commitment of US \$3.0 million in funding for the China Utility-Based Energy Efficiency Finance Program (CHUEE), co-financed with US \$16.5 million of funds from the Global Environment Facility. The majority of the MTI funds will be used to support a team of Finnish and local Chinese engineering consultants to provide core consulting engineering services for the CHUEE Program. The CHUEE Program supports the Government of Finland's international and development policies, and is poised to generate significant GHG emissions reductions, as well as important local environmental benefits to China.

China is facing severe energy resource shortages and rapidly growing energy demand. The CHUEE Program addresses these challenges using an innovative and comprehensive technical assistance program and risk sharing facility, working closely with financial institutions, utilities and energy efficiency equipment suppliers and service providers. MTI believes that China will benefit from Finnish energy efficient equipment technology and know-how transfer, and intends to play an active role in the CHUEE Program through its advisory position on the Program Advisory Committee.

Sincerely,

Markku Kavonius  
Senior Adviser

DISTRIBUTION

MTI Register Office  
MTI Industries Department

P.O. Box 32	Tel. +358 9 160 01
FI-00023 Government	Fax +358 9 1606 3866
Aleksanterinkatu 4	kirjaamo@ktm.fi
00170 Helsinki, Finland	www.ktm.fi