Document of
The World Bank

Report No: 36567

IMPLEMENTATION COMPLETION REPORT
(SCL-43500)

ON A

LOAN

IN THE AMOUNT OF US$300 MILLION

TO THE

PEOPLE'S REPUBLIC OF CHINA

FOR A

HUNAN POWER DEVELOPMENT PROJECT

June 29, 2006

Energy and Mining Sector Unit
East Asia and Pacific Regional Office

CURRENCY EQUIVALENTS

(Exchange Rate Effective December 31, 2005)

Currency Unit	=	RMB (Yuan)
Y1.00	=	US$ 0.125
US$ 1.00	=	Y8.0

Exchange Rate Effective throughout project implementation (1997-2005)

Currency Unit = RMB (Yuan)
Y1.00 = US$0.121
US$1.00 = Y8.28

FISCAL YEAR
January 1 December 31

ABBREVIATIONS AND ACRONYMS

BOT	Build, Operate and Transfer
CAS/CPS	Country Assistance Strategy/Country Partnership Strategy
CDGC	China Datang Group Company
EA	Environmental Assessment
EPB	Environmental Protection Bureau
ERP	Enterprise Resource Planning System
EMP	Environmental Management Program
FMIS	Financial Management Information System
HEPC	Hunan Electric Power Company
ICB	International Competitive Bidding
IERR	Internal Economic Rate of Return
LPP	Leiyang Power Plant
PPA	Power Purchasing Agreement
QAG	Quality Assurance Group
RAP	Resettlement Action Plan
TA	Technical Assistance
T&D	Transmission and Distribution

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Country Director	David R. Dollar
Sector Manager	Junhui Wu
Task Team Leader/Task Manager:	Jianping Zhao

CHINA
HUNAN POWER DEVELOP.

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Project ID: P035698	*Project Name:* HUNAN POWER DEVELOP.
Team Leader: Jianping Zhao	*TL Unit:* EASEG
ICR Type: Core ICR	*Report Date: June 28, 2006*

1. Project Data

Name: HUNAN POWER DEVELOP.
L/C/TF Number: SCL-43500
Country/Department: CHINA
Region: East Asia and Pacific Region

Sector/subsector: Power (100%)
Theme: Rural services and infrastructure (P); Climate change (P); Pollution management and environmental health (P); Other financial and private sector development (P); Decentralization (S)

KEY DATES			*Original*	*Revised/Actual*
PCD:	10/09/1997	*Effective:*	12/13/1999	12/13/1999
Appraisal:	03/28/1998	*MTR:*		
Approval:	06/18/1998	*Closing:*	12/31/2004	12/31/2005

Borrower/Implementing Agency: GOC/HEPC/CDGC
Other Partners: N/A

STAFF	Current	At Appraisal
Vice President:	Jeffrey Gutman (Acting)	Jean-Michel Severino
Country Director:	David R. Dollar	Yukon Huang
Sector Manager:	Junhui Wu	Yoshihiko Sumi
Team Leader at ICR:	Jianping Zhao	Hsiao-Yun Elaine Sun
ICR Primary Author:	Ivy H. Cheng	

2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

Outcome: S
Sustainability: HL
Institutional Development Impact: SU
Bank Performance: S
Borrower Performance: S

	QAG (if available)	ICR
Quality at Entry:		S
Project at Risk at Any Time:	No	

3. Assessment of Development Objective and Design, and of Quality at Entry

3.1 Original Objective:

The main objective of the project was to alleviate power shortages in Hunan by providing efficient, reliable

and environmentally sound power supply. This was the first World Bank involvement in the power sector in Hunan, and the project was designed to address some of the technological, environmental and institutional development challenges facing the province by taking into account successful international experiences. The project was expected to contribute to ease the issue of uneven development and widening gap between coastal and inland areas in China. It was responsive to the prevailing priorities of the Government, consistent with the Bank's strategy, and supportive of the implementing agency's development objectives (refer to Section 3.5 Quality at Entry). The project was complex as it was to introduce new technology along with institutional improvements, all in the midst of a major sector reform. It was also the first experience of the Hunan Electric Power Company (HEPC), an otherwise well-managed and competent utility, to manage a Bank-assisted operation. However, the project's preparation and implementation were considered within HEPC's reach, given support on technical, procurement and financial issues were integrated into the project design.

3.2 Revised Objective:

Project objective was not revised.

3.3 Original Components:

The project included four components: (a) Phase II Leiyang Power Plant (LPP) - supply and installation of two additional 300 MW anthracite-fired generating units at LPP to alleviate power shortage, improve the generation mix in a system dominated by seasonal hydropower, and facilitate the retirement of ten small, aging, inefficient, and polluting generation units in the Hunan provincial power grid; (b) reinforcement of the existing 220kV transmission systems – supply and installation of about 550 km of 220kV lines and 1,920 MVA of transformer substations capacity. The component would connect LPP and the competitively bid BOT (build, operate and transfer) Changsha Power Generation Plant (2x300MW) to the Hunan Provincial Grid and reinforce the transmission system in order to supply the increasing demand in a reliable, economic and efficient manner; (c) Technical assistance (TA) for engineering services for construction management, implementation of Hunan Electric Power Company's (HEPC) restructuring plan, and improvement of the financial management system; and (d) institutional development and training. The components were designed to support the power sector reform, and help build HEPC's institutional capacity under the new operating environment so it would achieve the stated project objective. Risks were identified and lessons learned from earlier projects were taken into account (refer to Section 3.5 Quality at Entry for an assessment of the design of the project components).

3.4 Revised Components:

As a result of the East Asia financial crisis, the main foreign investor of the BOT Changsha Power Generation Plant decided to withdraw its financial support in 1999. As the plant did not materialize, a portion of the transmission associated with it was dropped from the project (refer to Section 4.2(b).

3.5 Quality at Entry:

Satisfactory. The sector study Strategic Options in Power Sector Reform in China (1993), the sector report China Power Sector Reform: Toward Competition and Improved Performance (1994), and the discussion paper China: Power Sector Regulation in a Socialist Market Economy (1997) provided vehicles for dialogue between the Bank and Chinese institutions. The project was designed to support their joint agenda of improving the efficiency and minimizing the environmental impacts of electricity delivery and use while alleviating shortages and satisfying surging demand. Specifically, the project was to support two

themes stated in the 1997 Country Assistance Strategy (CAS) for China: infrastructure development, and protecting the environment. It was also envisaged to address many key sector issues identified by Government – infrastructure bottlenecks; inadequate wholesale electricity pricing system; unclear ownership rights and lack of commercial orientation of power entities; insufficient financing for transmission and distribution (T&D); little private sector involvement; and negative environmental impact of antiquated and polluting thermal plants.

The project's objective was to be achieved through physical investment and institutional development. The physical investment components were designed to increase electricity supply and system reliability in Hunan, one of the poorest provinces in China where economic development had been constrained by acute power shortages (estimated at about 3 TWh in 1995). The project would also support institutional reforms regarding the unbundling of power generation from T&D; development of efficient wholesale generation tariffs; and corporatization and commercialization of power companies. Compared to available alternatives, the project was deemed the most cost effective and the least detrimental to the environment. Besides efficient production of thermal power, the new capacity additions would also result in the reduced use or decommissioning of less efficient, and more polluting units. During project preparation, TA and training to support HEPC in technical, procurement and financial issues were partially funded by the China Reform Institutional Support and Preinvestment Project (CRISPP).

The Bank's safeguard policies on Environmental Assessment, Cultural Property, and Involuntary Resettlement were appropriately applied. Lessons learned from relevant projects were identified and taken into account in the design of the project. Government commitment and the implementing agency's ownership were high. At appraisal, ten critical risks were identified and analyzed. Overall risk was considered modest and manageable. Assumptions and risk mitigation measures were clearly spelled out.

In view of the project objective's clear linkage to the prevailing CAS and government priorities, the quality of project design, and the reasonableness of the risk assumptions, the quality at entry was considered satisfactory.

4. Achievement of Objective and Outputs

4.1 Outcome/achievement of objective:

Satisfactory. Despite a different global context (including the East Asian financial crisis), shifting government priorities, a new CAS in 2003 and a new Country Partnership Strategy (CPS) in 2006, the project's outcome objective remained relevant to the government at completion. The project, as designed, addressed a critical challenge faced by China – meeting soaring electricity demand in a cost effective and environmentally sustainable manner. It anticipated the need for corporatization and institutional building to further the power sector reform process. In particular, the objective was consistent with two of the 2006 CPS themes (managing resource scarcity and environmental challenges; and improving public and market institutions) and the Bank's social and environmental safeguard policies prevailing at the time of project completion, albeit toughened since project approval in 1998.

While project preparation and implementation overlapped with the most recent phase of power sector restructuring in China (which involved the unbundling of generation from T&D), its objective remained relevant to the sector. The project's specific development objective to alleviate power shortages in Hunan by providing efficient, reliable and environmentally sound power supply had substantially been achieved, albeit for various reasons elaborated below it had not been able to meet some of the key performance indicators at the time of project completion.

The physical implementation of the Phase II LPP and the various sub-components associated with the Furong Substation and the transmission that connect LPP to the provincial grid were completed and put into operation between 2003 and 2004. Performance of the power plant and the reinforced network had been highly satisfactory. As a result, the project met or exceeded many of its key end-of-project performance targets established at appraisal including: (a) a higher availability factor for the two units installed; (b) much improved fuel efficiency; and (c) lower overall emission rates for TSP and NOx (refer to Section 4.2 and Annex 1). This also allowed the retirement of eight inefficient and polluting units totaling 200 MW from the provincial system, with two more (100 MW total) scheduled for decommissioning in 2006.

The generation and transmission capacities added through the project greatly improved the overall efficiency and reliability of the Hunan grid as it previously suffered from high losses, particularly in the heavy loaded, fast growing urban areas of the Changsha-Xiangtan-Chuzhou triangle. The only exception was during a brief break from decades of power shortages in 2000-2002 when there was excess capacity in the system. The rare phenomenon prompted the government to unwittingly halt commencement of many major investments including the project (refer to Sections 4.2 and 5.1). Hence, prior to the completion of the project, the expected reduction in lost production never materialized. In terms of increase in production attributable to the project, mirroring the implementation delay, achievement of appraisal targets was also two years behind schedule, though the growth had been faster than projected due to the higher availability of the units (refer to Annex 1: performance for 2003 estimated at appraisal corresponds to actual performance for 2005).

When rapid economic growth resumed in 2003 *(during the period 2003 to 2005, the average annual growth in power consumption in Hunan Province and Changsha Municipality were 12.4% and 12.7% respectively, while the average annual growth in GDP per capita (in constant currency) in Hunan was 10.5%*) and the need for power supply, transmission upgrades and institutional development became even more urgent; the system was not able to respond promptly. The integrity of the already stressed system was put to test during the highly unusual and severe ice storms in the winter of 2004/05 when eight 220 kV power lines were downed and many transmission towers fell. At their worst, the storms incapacitated much of the system and caused dramatic load shedding (refer to Annex 1). However, the reinforced portion of the T&D system proved highly reliable, and the project was in fact credited for preventing a total collapse of the Hunan grid. The thermal units were also considered an important addition to balance the provincial power system that was predominately hydro (55%) and highly weather dependent.

At the time of project completion, substantial and sustainable development results were deemed highly likely. Overall outcome was therefore satisfactory.

4.2 Outputs by components:

(a) Construction of two additional 300 MW anthracite-fired generating units at the Leiyang Power Plant

Satisfactory. This component constituted the second phase of development of the existing LPP. Implementation suffered significant delays at the outset; the loan was effective in December 1999, about 18 months after signing; and the State Council's final approval for civil construction commencement was not given until September 2002 because of its concern over slowing power demand at the time. While awaiting approval, HEPC continued to actively prepare for procurement under the project, but the process also took longer than expected. Initially, the delay was caused by the amount of time it took to finalize the bidding

documents. When the main boiler package was finally ready and the bids were opened in February 2000, complications set in as days thereafter the lowest bidder, which eventually won the bid, filed for US Chapter 11 bankruptcy protection. The contract was not signed until June 2001 when all the terms and conditions were clarified and a financial guarantee was arranged. Evaluation and award for the turbine-generator package also suffered delays due to confusions over the treatment of value-added tax in bid prices for domestic suppliers, as the Government's policy happened to have changed right after bid opening.

All the complications notwithstanding, once construction commenced HEPC's focus on construction management, safety, and quality control played a critical role in accelerating implementation. In order to streamline the procurement process and synchronize the overall construction timetable, HEPC proposed to use domestic funds instead of the Bank loan to finance the instrumentation and control, and other smaller equipment packages (totaling about $8 million equivalent). The Bank consented, and the procurement method for these packages was changed to local competitive bidding. The two generation units were in full commercial operation by June and November 2004, three months ahead of the revised schedule. Operation had been normal, with both boiler and electro static precipitator (ESP) efficiency achieving the design values. For 2005, availability rates for Units 1 and 2 were 95% and 99% respectively (refer to Annex 1: Performance Indicators), total power generated was 2,480 GWh. This level was exceptionally high due to the unusual weather related emergency (refer to Section 4.1) and was therefore not expected to be sustained.

Retirement of ten smaller, older inefficient generation units totaling 300 MW was a key project output. The actual phase-out program was proceeding on schedule until 2002, with eight 25 MW units totaling 200 MW decommissioned in 1998 and 2000 (refer to Annex 1). However, because of renewed power shortages since 2003, and continued thermal/hydro imbalance in the province, retirement of two remaining units totaling 100 MW had been postponed from their original schedule of 2002 and 2004. In 2005, the units ceased operation completely and they were scheduled to be decommissioned officially in 2006.

(b) Reinforcement of the existing 220kV transmission system

Satisfactory. The transmission component was comprised of three parts – transmission connecting the LPP to the Hunan provincial grid, transmission connecting the proposed BOT Changsha Power Plant to the provincial grid, and reinforcement of the Furong substation in Changsha. The original plan included the addition of almost 800 kilometers of 220 kV lines and 11 new or reinforced 220 kV substations totaling 1,920 MVA of added transformer capacity. Actual construction under the project added about 550 km of transmission lines and 1,980 MVA of substation capacity to the system. A comparison of actual vs. plan is summarized in the following table and paragraphs:

	Leiyang Transmission			Furong Substation			Changsha Transmission			Total		
	Plan	Actual	A/P	Plan	Actual	A/P	Plan	Actual	A/P	Plan	Actual	A/P
220 kV Single/Double Transmission Lines												
No.of Segments	7	7	-	-	-	-	13	10	-	20	17	-
Length (km)	411	321	78%	-	-	-	378	226	60%	789	547	69%
220 kV Substations												
No. of Locations	5	5	-	1	1	-	5	2	-	11	8	-
No. of Transformers	5	8	-	3	3	-	5	3	-	13	14	-
Capacity (MVA)	720	960	133%	540	540	100%	660	480	73%	1,920	1,980	103%

Leiyang Power Plant Associates – Seven segments of 220 kV lines totaling 321 km were completed between 2001 and 2005, and five substations totaling 960 MVA were completed between 2000 and 2005. Actual length of transmission lines was below the appraisal estimates by 22%, mostly due to improved alignment. In order to accommodate increased need for transformer capacity, total substation capacity added was 33% over the appraisal estimates. With these additions, the intra-province network was reinforced, and overall system reliability was improved. In particular, it increased power availability and security in major cities in the southern part of Hunan (Changsha, Chuzhou and Xiangtan).

Furong Substation Reinforcement – The indoor substation in Changsha with a total capacity of 540 MVA was commissioned in May 2003. Construction took 29 months to complete as compared to 25 projected at appraisal. There were three contributing factors: delays in procurement, extension of the cable tunnel by about three kilometers to accommodate the municipal government's changes in city development plan; and a dispute involving the right-of-way of a 200- meter segment of overhead 220 kV line. The eventual successful completion and operation of the substation significantly enhanced bulk power transfer and was critical to alleviating acute power shortage in the Changsha city load center, and avoiding further overburdening of the already congested city network. It also played an important role in limiting pollution in densely populated areas.

Changsha Power Plants Associates – In 1999 when it became clear that the envisage BOT Changsha Power Generation Plant was not going to materialize, three substations and three transmission segments out of a total of 18 sub-components were dropped. While few new construction started, most work-in-progress were commissioned and used to support the intra-provincial network.

Environment

Satisfactory. The project was rated "Category A" under the World Bank Environmental Assessment Safeguard Policy, and as such environmental considerations were incorporated into the project objective, institutional development, and environmental assessment (EA) and management.

The project objective related to environment was a reduction in the overall emission rates for air pollutant sulfur dioxide (SO2), nitrogen oxide (NOx) and TSP. As indicated in Annex 1, the levels of SO2 and NOx emission were relatively constant. It reflected the fact that no de-SO2 and de-NOx controls were implemented in new power plants and the decommissioning some inefficient plants was delayed (refer to 4.2 (a)). HEPC believed the recent government tariff policies that encouraged and promoted the construction and commissioning of de-SO2 and de-NOx controls would substantially reduce emission in the future. The improvement in TSP was the result of the commissioning of highly efficient dust collection

systems on new generation units that were more fuel efficient, and the retirement of more polluting older units. Besides ambient air quality, environmental monitoring and evaluation also covered cooling water, wastewater, drainage, ash and slag disposal, dust, noise, and safety measures around the generation and T&D facilities.

There were three aspects of environment related institutional development: (i) training – the project design included overseas and local training for managers and technical staff in ambient and stack gas monitoring. As LPP had been operating two continuous air quality monitoring stations for years, only the necessary portions of planned training was carried out; (ii) procurement of environmental monitoring equipment – actual purchase was limited as the Environmental Unit at LPP was already in full operation and well equipped; and (iii) development of air quality monitoring skills at the local environmental protection bureau (EPB) – air quality data with full boiler operation was collected for one year continuously. Based on the results, officials maintained that while air quality was somewhat affected by the project, all values were within Chinese standards, as was concluded in the EA analysis. Thereafter LPP selected to end the monitoring program. The Bank recommended that the monitoring equipment, and the know-how to operate and maintain it be transferred to the local EPB at no cost. This would ensure that the institutional development activities would provide sustainable results. At the time of project completion, negotiation of an agreement was underway.

The implementing agencies were very committed to proper environmental management and carried out the agreed program diligently and professionally. All mitigating actions were performed in the manner specified and in some instances they exceeded the requirements of the Environmental Management Program (EMP) which included the more significant issues identified in the EA.

Resettlement

Satisfactory. Both generation and transmission components involved some degree of land acquisition and resettlement. Resettlement action plans (RAP) were prepared and approved by the Bank in two phases (1998 and 1999). A total of ten municipalities, 37 counties, 92 townships, and over 1,200 persons in Hunan province were to be affected. The RAP involved acquisition of cultivated and non-cultivated land, demolition of about 16,000 square meters of building space, and relocation of about 175 households. The plan was later revised down when some of the Changsha transmission sub-components were dropped. Actual scope of resettlement was further reduced when some transmission lines were re-aligned, and some substations were downsized with the adoption of new technology (up to 80% reduction in space requirements in some cases).

Compensation rates, assistance and incentives established during project preparation followed the Government's Land Administration Law and provincial regulations. Extensive consultation and comprehensive reviews were conducted when modifications or alternatives were considered (*execution of the RAP was extended for about two years to match the overall project implementation schedule. During that period, the local economy developed rapidly, and communities were also significantly empowered. People's expectation for compensation changed. As a result, the standards were adjusted and renegotiated periodically).* HEPC had overall responsibility for resettlement management, while actual implementation also involved LPP and three power supply entities. Close collaboration between their resettlement offices and local governments was instrumental in ensuring a smooth and timely implementation of the RAP.

In order to ensure that people and economic units affected had indeed been able to, or would in time be able to, restore or improve their income and livelihood, in addition to HEPC's internal monitoring system, an

external evaluation team was hired to monitor progress regularly. Annual surveys were conducted between 1999 and 2005 and results were documented and used as feedback for timely adjustments as needed. According to the reports and spot interviews by the Bank's supervision missions, the affected households and work units were quite satisfied with the new arrangements and opportunities (refer to the Summary of Resettlement Report).

All resettlement activities were satisfactorily implemented by 2004, with entitlements fully delivered and compensation rates either met or exceeded those prescribed in the RAP.

(c) HEPC Restructuring, Construction Management and Financial Management System

Implementation of HEPC's restructuring plan - Satisfactory. Sector restructuring was expected to impact HEPC in several major ways: the company was to relinquish all government and regulatory functions; it was to transfer generation assets and associated liabilities and personnel to generation companies, and thereafter operate as a grid company (refer to Section 4.4); and it was to implement a competitive power market in Hunan. At appraisal, it was envisioned that the TA program designed would help HEPC complete the following: (i) corporate and asset restructuring; (ii) operational and financial modeling of the Hunan power system; and (iii) preparation of contractual agreements for power purchase, dispatch, and operations and maintenance.

As part of the sector unbundling, almost all of the power generation facilities under HEPC (both assets and liabilities) were officially divested at the beginning of 2003. In December 2000, the former Hunan Electric Power Bureau, which shared the same staff and facilities as the HEPC existing at the time was dissolved, and HEPC was reorganized into a limited liability company that focused on the business of T&D and dispatching. Except for three hydro plants retained for peak loads, the rest of the company's hydro plants were transferred to the China Power Investment Company. The thermal plants, including the project financed Phase II LPP, were transferred to the China Datang Group Company (CDGC) as branches of the company headquartered in Beijing. Although LPP was not incorporated as an independent power producing company with legal and financial autonomy as previously anticipated, it enjoyed much independence in the day-to-day management and operation of the thermal plant.

During the initial years of project implementation, a study of HEPC's proposed new organization structure and business management procedures was conducted. Some office automation initiatives were also underway. However, the Government's reform principles issued in 2002 rendered some findings and recommendations of the study obsolete. The office automation activities was suspended and later absorbed into the enterprise resource planning system (refer to next sub-section).

In terms of implementation of a competitive market, a Steering Committee was established to oversee the power market reform process in 1998. An international consultant was competitively selected in the same year to provide comprehensive training and to develop principles for the establishment of a power market in Hunan. To this end, a diagnostic report with analysis and work plan was prepared. While the findings were insightful, HEPC did not implement the plan as the State Council Document No. 5 issued in 2002 called for the development and implementation of competitive market in the regional rather than the provincial level. At the time of project completion, the competitive power market was still in the design and preparation stage in the central China region (which covered HEPC) as it was not one of the pilot regions. The government was still responsible for determining the overall wholesale tariff structure and level. Nevertheless, as discussions on switching to a two-part tariff system (with energy and capacity components) were still underway, Hunan had already taken steps to pioneer a more efficient wholesale tariff system. It was the first province in China to introduce seasonal and time-of-day tariff to mimic a

competitive power market, and it also endeavored to dispatch power plant based on the cost of production.

With regards to the preparation of contractual agreements and other commercial documentations, HEPC and LPP observed that the business arrangements in effect at the time of project completion were not fully commercial in nature as the quantity of power production and purchase, and the pricing of bulk power were still determined by negotiations among the provincial Economic Commission, HEPC and the power producers. The key determinants, among others, were estimated supply and demand in Hunan, and the cost of production. The existing PPA between HEPC and LPP was signed in 2003.

In summary, the Hunan power system made significant progress in restructuring in that the separation of generation from T&D was complete; the implementation of a competitive wholesale power market was moving in the right direction; and a PPA was in effect. In recognition of HEPC's constraints and rationale for deviating from following the appraised restructuring plan, achievement of this output objective was considered acceptable.

Engineering services for construction management - Satisfactory. During project preparation and the early stage of implementation, an international consulting firm was retained with CRISPP funding to provide engineering services to HEPC. The total assignment was divided into three phases, and commitment was to be made phase-wise. As the design of LPP was new to Hunan (double arch down-shot boiler), the consultant's participation contributed considerably to the detailed design, interface coordination, finalization of the technical specifications, procurement of the main plant equipment and construction planning. However, once the project entered the construction phase, HEPC felt it could competently manage the process as it had experience with similar constructions and could build on new knowledge gained. In July 2002, by mutual agreement and with the Bank's consent, the TA contract was not extended to cover the construction management phase. The company carried out the work with its own staff.

The approach adopted for construction management and engineering services was materially different from the one appraised. However, HEPC proved itself in that the quality of the power plant built was excellent, the construction schedule was advanced, and its construction and operation safety record had been perfect. In terms of trial operation results, performance of the power plant compared well with similar projects in China, and the quality of the work was ranked highest among similar constructions in Hunan. Eventual performance of the generation units was also good. Hence, this sub-component was rated satisfactory.

Improvement of the financial management system - Satisfactory. At appraisal, it was envisaged that consulting services would be provided to help HEPC redefine its internal structures and processes; upgrade the accounting, financial and management practices and systems; and develop a modern financial management information system (FMIS).

During the design stage, HEPC management and key financial staff visited several implementing agencies of other Bank projects, and recruited international specialists to provide training on FMIS concepts. The training sessions were designed to meet the focus and needs of three participant groups (senior management, financial managers, and financial and information staff). A total of about 260 persons from HEPC participated (as part of component (d). Thereafter, a steering committee headed by the chief accountant was established to develop a master plan. The work was suspended because of the many uncertainties revolved around the restructuring, and only resumed in 2002. After several visits to other provinces in China, HEPC concluded that it would adopt a phased approach and design its own system as part of an integrated enterprise resource planning (ERP) system. To avoid the risk of costly mistakes, the company decided to carry out the work with its own staff using internal resources, and to proceed at a pace

consistent with its overall needs. The Bank concurred.

The first two phases of development focused on financial and project management. The Cash Management Module and the Financial Management Gateway had been in use since 2005. The design of a FMIS concluded in mid-2005, and piloting followed. Full rollout of the Revenue Management System was expected in mid-2006. During implementation, as each new module was completed, it was integrated into the existing system. Dedicated teams and technical personnel had been appointed to lead and maintain the systems. A training center, various discussion forums, and a feedback loop have also been established to support system implementation, monitoring and evaluation. At the time of project completion, HEPC considered progress thus far satisfactory.

Although implementation of the FMIS deviated substantially from the appraised plan and timetable, it remained fully consistent with macro and sector policies and the project objective. As the power sector restructuring in China was constantly evolving, HEPC's pragmatic approach to learn from international practices and domestic experiences and to design and adjust its program according to its own needs and time frame appeared to be appropriate and justified. Assessment of this sub-component was based on its eventual result, which was positive and practical (refer to Section 4.5 for an assessment of the impact of the ERP/FMIS on HEPC).

(d) Institutional Development and Training

Satisfactory. At the time of appraisal the training program was designed to enhance HEPC's managerial, legal, technical and financial capabilities so it could function as an efficient T&D company. A total budget of $1 million was allocated for the training of about 400 persons totaling a little less than 500 staff-months. During project implementation, HEPC decided to use internal resources to fund additional overseas training not included in the original plan. While the Bank loan was significantly under-spent, the international training program was largely consistent with appraisal expectations, except no training on legal aspects had been carried out. In all training before the Bank loan became effective and during the project implementation included 29 overseas study visits (to Australia/New Zealand, Canada, France, Germany, Italy and Norway) and one training course in China, benefiting about 550 participants, for a total of about 280 staff-months. Training topics included managerial, technical and financial aspects of operation, and appeared to be comprehensive to meet the evolving needs of HEPC (which included staff later transferred with LPP).

Note on Project Management. While the content of the project remained the same after the separation of LPP from HEPC, responsibilities were reallocated according to the transferred assets and liabilities. Specifically, HEPC retained obligations associated with the transmission component, and TA for sector restructuring, accounting and FMIS development, and CDGC was responsible for all obligations associated with LPP. Based on detailed project expenditures, the amount of assets and liabilities were established, certified by an independent auditing firm and agreed upon *(out of a revised Bank loan amount of about $138.1million (refer to Section 5.4), all but about $12.3 million of HEPC's obligation was to be transferred to CDGC)*. At the time of project completion, all needed information and supporting documentation had been collected, and legal steps to formalize and reflect the transfer were underway. The process was expected to include: (a) amendment of the Loan and Project Agreements; (b) rectification of a new or modified subsidiary loan agreement (and guarantee arrangement if applicable); and (c) signing of a supplemental agreement between HEPC and CDGC.

4.3 Net Present Value/Economic rate of return:

Satisfactory. The project was primarily justified on least cost analysis. For the generation component, which comprised about 69% of the total estimated project cost, the study covered the development of the system during 1997-2025, with special focus on the investment required during 1997-2010 planning period.

A cost-benefit analysis was also carried out at appraisal to confirm the economic viability of the LPP Phase II project. The analysis was based on the estimated economic cost of the generation component (in 4,366 million 1997 Yuan (or $526m)) and the expected sales revenue to be generated valued at the bulk rate of supply (Y5,952 million (or $717m) based on bulk rate of 29.1 fen/kWh and 6,850 hours/year. Assumptions on tariffs were made based on prevailing pricing policies. The calculation yielded an internal economic rate of return (IERR) of 19.4%.

At completion, the weight of the generation component was 68% of total project cost. Using a similar methodology, a re-estimation yielded an IERR of 15.4 % (refer to Annex 3). The lower estimated return was mainly the result of a stretched out construction period and delayed completion. The level was within the range established in the risk analysis conducted during appraisal, and was considered adequate.

4.4 Financial rate of return:

Financial assessment of the project initially focused on the financial viability of HEPC and its compliance with the financial covenants. After LPP was separated from the company and the bulk of the Bank-financed project assets were transferred to CDGC, financial assessment of the project also covered the performance of LPP.

HEPC - Satisfactory

Debt Service Coverage Ratio Covenant. Actual financing requirement of the project was about 58% of the appraisal estimates (see Section 5.4). This resulted in the cancellation of over half of the original Bank loan and a reduced need for local borrowing. Compounded with lower than expected interest, HEPC had been able to stay relatively close to the covenanted level of the debt service coverage ratio of 1.5 times, despite a much lower than expected internal cash generation, particularly after unbundling. Actual ratios ranged from 1.3 to 1.5 times in the past several years. At the time of completion, the ratio was expected to stay within that band in the foreseeable future.

Return on Equity and Tariff Principle Covenant. The company's rate of return on equity during the recent past at around 3%, though not atypical among similar power grid companies in China, had been significantly below the covenanted levels (8%-12%). From 1998 to 2002, the main reason was the low profitability of the Government mandated upgrade and expansion of the township and rural networks. The sector unbundling that took effect in 2003 greatly exacerbated the already sub-par performance. While HEPC lost about 25% of its staff and 40% of its fixed assets during the restructuring, the company's income statement showed a 77% drop in net income. Further, the Government appeared to expect the power company to make very low returns as a matter of policy *(for example, in 2003 HEPC's rate of return on net fixed assets was measured against a target of 0.58%. At a rate of 1.01%, it was already considered fully satisfactory).*

During project implementation, it became clear that the original intent of the covenant was no longer relevant. The sector restructuring obliged the former HEPC to divest its generally more profitable generation assets to become a virtually all T&D company. At the same time, Government mandated network extensions (often in non-profitable rural areas) required HEPC to absorb some of the negative effects of revenue losses. This severely infringed upon the company's financial autonomy and limited its

ability to generate adequate revenue to meet its obligations. The covenanted measures also proved difficult to calculate and monitor when the project assets integrated into an increasingly interconnected power grid. Moreover, there were still many distortions such as understatement of revenue (consumer contributions not reflected as income) and overstatement of expenses (depreciation as high as 7% per year) in sector practices that affected the appearance of a power company's financial viability. At the request of the Borrower, the Bank agreed to drop this covenant. At the time of project completion this change was being handled as part of the legal amendment that was underway to reflect the transfer of project ownership (refer to 4.2 (d)).

Audit Covenant. Audit reports of acceptable quality had been submitted to the Bank on time. There had been two justified delays, in 2002 because of the SARS outbreak, and in 2003 when the annual audit was carried out in two phases because of the complications associated with the transfer of assets and liabilities.

Rolling 8-year Financial Projections. The parameters and assumptions used for the original financial forecasts were overtaken by the sector reform events soon after project implementation. Because of the uncertainties revolving around many of the critical assumptions and the lack of relevant historical data, HEPC had not been able to produce any meaningful financial forecasts until 2003, and the Bank agreed to waive this covenant in the interim. The latest set of comprehensive projections was prepared in 2005. Overall quality of the annual financial forecasts continued to be good. Based on the assumptions made, the forecasts indicated that the company's financial position would improve slightly over time, but on the whole it would be maintained at the 2005 level.

LPP Finances – not rated. Even though LPP was established as a branch of CDGC and not legally or financially autonomous, it was still expected to operate efficiently, and follow sound financial practices and discipline including full cost recovery principles. In anticipation of a new Project Agreement (refer to the end of Section 4.2), LPP was asked to measure its performance against the existing financial covenants with the former HEPC regarding debt service coverage ratio and rolling financial projections. Based on assumptions made, LPP appeared to be able to meet them, though with increasing pressure from coal price liberalization, the assumptions might not hold for long and LPP's profitability could well decline.

4.5 Institutional development impact:

Through implementation of the institutional development components, the capacity of the implementing agencies (including HEPC and later LPP) to carry out comprehensive system planning and construction management was considerably enhanced and put into good use. First hand experience in the construction and operation of project facilities, and environmental management provided a solid foundation for a proposed phase III development of LPP. Despite hiccups during the procurement process, both implementing agencies appreciated their first experience with international and local competitive bidding, and found the packaging and procurement methods systematic, fair, transparent, and cost effective. Competition following the "World Bank model" had since been introduced to most (local) procurement, and internal procurement guidelines adapted from the Bank's version were developed. The use of international consultants, third party audit and mediation, as well as periodic review and feedback had also been institutionalized and applied to other ongoing and planned large projects. Through dozens of promotions and reassignments, the know-how and experience gained by HEPC and LPP management and technical professionals also benefited other power entities in Hunan and within the CDGC system. Through the implementation of the environment component and resettlement activities, the project was critical in heightening awareness and enhancing the implementing agencies' capacity to follow good practices consistent with international and domestic standards. The rolling financial projections, and the ERP and human resources systems were considered instrumental in ascertaining HEPC's operational efficiency, and enabling it to better utilize its human and financial resources. HEPC indicated that the systematic approach to accounting and financial management had enabled it to clarify each department's functions and responsibilities, standardize procedures, minimize delays and duplications, and strengthen internal control and information flow. At completion, the institutional development impact of the project was deemed **substantial.**

5. Major Factors Affecting Implementation and Outcome

5.1 Factors outside the control of government or implementing agency:

External factors in procurement caused delays and affected project implementation. The most significant issue was related to the procurement of the main boiler package through ICB. When the lowest bidder filed for US Chapter 11 bankruptcy protection and the bid was awarded to it following Bank procurement guidelines, contract negotiation became very complicated for HEPC. As HEPC was not familiar with US business law and regulations, the process was time consuming (16 months from bid opening to final contract signing) and costly to HEPC.

The East Asia financial crisis in 1997 also affected project implementation and outcome. One of its delayed impact on China's economy and power sector was a temporary dip in electricity consumption and excess supply in the late 1990's in areas where industrial users dominated the market (as in the case of Hunan). This phenomenon contributed to the State Counsel's decision to halt all thermal generation investments for three years. The government's decision caused a two-year delay in the approval of project construction (as with other Bank-financed projects prepared during the same time period). The crisis also prompted the external financier to scrap its plan to invest in the Changsha BOT in 1999. The project's scope was reduced as some of the associated transmission sub-components were dropped.

The project completion cost was considerably lower than the original cost estimates because of a significant drop in world prices (especially in the region after the East Asian financial crisis), low contract prices and a steady decline in interest rates (refer to Section 5.4 for details). Coupled with the conservative cost estimates, they led to the cancellation of over half of the original loan amount.

5.2 Factors generally subject to government control:

Macroeconomic policies and conditions remained stable during project implementation. The government continued to be committed and supportive of the project in principle; however, as noted in the previous sections, its concern over slowing power demand had delayed approval of construction by about two years.

The power sector restructuring introduced major changes and uncertainties, some details were still being worked out and clarified. This was a contributing factor to the delayed approval of project construction. The evolving situation's most direct effect was on the slow down in the implementation of the project's TA activities. Many had to be redesigned or dropped because they were no longer appropriate under the new operating environment (refer to Section 4.2). The government's control on pricing and tariff rebalancing during unbundling had serious implications on the company's financial performance (refer to Section 4.4).

Provincial and local government support for and participation in the implementation of the RAP and EMP was critical to their successful implementation (refer to Section 4.2). The provincial government's timely dissemination of resettlement information prior to implementation made the process transparent to those affected and greatly facilitated the work. However, due to delays in implementation, resettlement also became more complicated and costly (refer to Section 4.2). In project construction, local government intervention was instrumental in resolving a dispute regarding the right-of-way of a 200-meter segment of overhead 200kV line associated with the Furong substation. The dispute delayed the stringing of the last three kilometers of lines, and postponed the commissioning of the substation by almost ten months.

5.3 Factors generally subject to implementing agency control:

Project approval was delayed, however, HEPC's proactive approach to involve various levels of government, specialists, local media and communities early on helped build local support and reduce misinformation about the project. Its highly effective construction management approach and concerted effort to anticipate and handle potential quality and safety issues allowed it to proceed smoothly and complete the work ahead of the revised schedule. Despite the delays, project cost was well below estimates, in part due to effective cost control measures; counterpart funding was secured on a timely basis; and operation and maintenance of project facilities had been regular and satisfactory.

HEPC's decisions to modify or drop the various TA and training sub-components were carefully considered, practical and realistic. Those implemented were well planned and executed, and they contributed to the continued success of HEPC and the transferred LPP. Overall management effectiveness, staffing, and monitoring and evaluation were adequate.

5.4 Costs and financing:

At the time of appraisal, total financing required for the Leiyang generation component was estimated to be $518.7 million, of which $290.9 million (56%) was foreign. Final estimated cost including associated institutional development activities was about $297.1 million, of which $125.2 million (42%) was foreign (refer to Annex 2). As compared to the appraisal estimates, the component had a cost under-run of about 43%. The savings were mainly attributable to a drop in world prices; competitive bid price for boiler, turbine generators and instrument and control units; reduced scope of imported goods; exemption of certain taxes and duties; efficient construction management; conservative cost estimates at appraisal (based on prevailing information and projections); and lower borrowing and capitalized financing charges; and lower than expected inflation. Unit cost of the generation facilities built was at par with similar generation units

in China.

At appraisal, total financing required for the transmission component was estimated to be $228.5 million, of which $41.7 million (18%) was foreign. Actual cost was about $138.0 million, of which $12.1 million (9%) was foreign (refer to Annex 2). As compared with the appraisal estimates, the component had a cost under-run of about 40%. The savings were mainly attributable to cancellation of a large portion of the Changsha transmission sub-component, reduced scope of imported goods, increase in the local financing, savings in procurement of equipment, conservative cost estimates at appraisal, and lower borrowing, capitalized financing charges, and inflation.

In consideration of the cost savings and reduction in foreign exchange requirements, three cancellations totaling about $162 million of the original $300 million Bank loan were made in 2001, 2002 and 2004. An undisbursed balance of $0.8 million was cancelled upon closure of the loan.

6. Sustainability

6.1 Rationale for sustainability rating:

The project, over its economic life, was expected to maintain and build on the achievements made. While the sector unbundling resulted in many staff reassignments, most key management and technical specialists had been retained within the Hunan power system. For both implementing agencies, TA and training, particularly those that were systematically carried out and had practical applications were considered highly effective, and their impact was expected to be sustained.

With the anticipated transfer of air monitoring equipment and skills to the local EPB in the Leiyang region, the project was expected to provide an important element of sustainability of air quality management. The EPB was expected to develop skills and use monitoring results to assess impacts of various economic activities on air quality. This would pave the way for the development of an air quality management plan for the area in the long run.

At completion, given the government's strong commitment to continued sector reform; the current policy environment; the better-run implementing agencies; and the economic, technical, financial and environmental viability of the project; the growing market demand and the critical role the project was expected to continue to play; the proposed next stage of development of LPP; and the transitional arrangements already in place, sustainability of the project's facilities and institutional impacts was deemed **highly likely**.

6.2 Transition arrangement to regular operations:

Satisfactory. Since commissioning, the implementing agencies had been operating the project generation and transmission facilities competently. Concerted efforts had been made by both HEPC and LPP to implement their respective maintenance programs, and carry out monitoring and evaluation that were established in accordance with international standards and manufacturers' recommendations. The program proved to be effective in increasing power production and T&D, power availability, safety and quality of services. At completion, HEPC and LPP, under the auspices of CDGC, were fully expected to continue to provide all necessary input to operate and maintain their facilities and ERP/FMIS systems satisfactorily, progress on the institutional reform front, and maintain their financial viability. These actions were considered sufficient for satisfactory regular operations.

7. Bank and Borrower Performance

Bank

7.1 Lending:

Satisfactory. At identification, linkage of the project components to the CAS objectives and the government's development strategy and sector priorities were clearly established. Thereafter, the Project Team assisted the Borrower and HEPC in project design and in preparing the project to meet the Bank's technical, financial, safeguard and economic standards. In parallel, the Team helped HEPC to design a TA and training program to strengthen its institutional capacity to implement the project and meet its obligations. CRISPP funding was also secured to support the implementing agency in project preparation. The Project Team's input benefited from the Bank's extensive economic and sector work on China, as well as the experience gained and lessons learn from a highly successful Bank program in the country's power sector. The composition of the appraisal team was comprehensive, including specialists in energy, power sector restructuring, engineering, finance, economics, environment and resettlement. Bank staff established good working relationship with the government and the implementing agencies during preparation and appraisal of the project. Coverage and documentation of appraisal was comprehensive as reflected in the Project Appraisal Document and the project files.

7.2 Supervision:

Satisfactory. Project supervision was planned and carried out regularly. By and large, supervision missions were adequately staffed, and time in the field was sufficient. The frequency of mission was adequate – 16 times (including one ICR mission) to the implementation offices and project sites over a period of about seven and a half years. The project was managed from the Bank's Beijing Office.

For the most part, staff showed flexibility in supporting the implementing agencies by accepting alternative approaches to the design and implementation of the TA and training components, and in the deletion of some transmission sub-components and a financial rate of return covenant that were no longer appropriate. The Bank team was also responsive to HEPC's multiple requests to cancel portions of the loan. Working relationship among staff of the Bank, the Borrower and the implementing agencies was collegial. All parties also paid adequate attention to the likely developmental impact of the project.

Progress reporting was timely and mainly focused on the physical aspects and related TA and training activities of the project. Performance ratings in PSR were largely realistic. Agreed actions had been substantially followed-up. Supervision activities and the team's recommendations were routinely reviewed by Bank managers. Their involvement and support at critical points of project implementation had been consistent.

7.3 Overall Bank performance:

Satisfactory.

Borrower

7.4 Preparation:

Satisfactory. Project preparation was coordinated by HEPC, which at the time was responsible for power investments in Hunan. The project design was well suited to meet the urgent need for efficient production and T&D of power in the province, and due attention was paid to its associated environmental and social impacts. A procurement management group was established since the inception of the project. The group, with the support of an international consultant, facilitated the planning and implementation of procurement activities that included many complex equipment packages.

7.5 Government implementation performance:

Satisfactory. The Central governments took active measures in promoting power sector reforms and facilitating power trade in the country. The local governments had also been most supportive of the project, and consistently facilitated its implementation. Counterpart funds (in the form of local bank loans) were available in a timely manner. On the other hand, the Government's decision to slow down investments in the power sector during the late 1990's, and the complex issues associated with sector unbundling also caused major delays in project construction approval and implementation.

7.6 Implementing Agency:

Satisfactory. Management of the generation units and transmission facilities was fully satisfactory. During construction, high caliber management and technical specialists were staffed to implement the project. A comprehensive site program aimed to promote safety awareness and create a safe working environment to prevent injuries was consistently executed at all time and in all construction sites. HEPC's construction management and quality assurance efforts enabled it to establish and enforce high standards. All newly built facilities met the state level acceptance tests for commissioning and the project quality was considered exemplary both within the province and nationally. The company's financial projection model was used as a good practice example for similar power projects.

The Environmental Unit at LPP was in full operation with the Phase I project, so the additional requirements under the EMP were readily accommodated (refer to Section 4.2). Several key aspects the Program were implemented to a greater degree than was required, in large measure due to the experience and high level of professionalism among its environmental staff. It also reflected positively on the overall plant management that encouraged this culture.

7.7 Overall Borrower performance:

Satisfactory

8. Lessons Learned

Of general application: Procurement – HEPC did not have prior experience with ICB. Although the company was supported by consultants and the Bank throughout the process, it was troubled by some of the subsequent events such as bankruptcy threat regarding the winner of the boiler package and the time it might have taken to clarify the specifications for the instrumentation and control equipment package and finalize the bidding documents (refer to Sections 4.2(a) and 5.1). The Bank should consider including these cases for discussion and future references.

On the selection of consulting firms for TA and services, the client felt that the criteria used and qualification required often had an inherent bias towards well-established international firms. In situations

where up-to-date local knowledge was critical, national consultants competitively selected might be more appropriate for the client. Similarly, for TA assignments related to management and corporate restructuring where hands-on experience was critical, it might be more fitting to expand the list to include practitioners (other power companies) in addition to well-known management consulting firms.

Cost estimation – The project had a large amount of loan cancellation. Among the contributing factors, an important one was the very conservative cost estimates at appraisal, following Bank guidelines and practice. More practical and realistic cost estimate should be used so as to optimize the Borrower's financing cost.

Specific to the Power Sector in China: TA and Training – the project included many TA and training activities, and the majority of them were focused on supporting the implementing agencies while the power sector reform was ongoing. As the reform evolved, new needs arose and some of the originally designed TA was rendered less relevant. It became imperative for the Bank and the implementing agencies to keep sight of the project's ultimate developmental objectives, while making adjustments to the appraised plans to reflect the situation on the ground.

While engineering services support on design optimization and procurement etc. was essential to HEPC during the preparation phase, the company decided to use its internal resources to carryout construction management. Construction of the physical component turned out to be timely and of high quality; safety record was also excellent. Not using international consultants for construction supervision proved to be very cost effective for the company.

Participants found training and TA regarding institutional reform less relevant and useful unless consultants involved were familiar with the China power sector and up-to-date on the ongoing reform. When the situation was volatile, studies and assessments completed were often overtaken by events and had to be abandoned. While to some extent it was unavoidable, this factor should be taken into consideration in the design of reform related TA and training activities.

To the implementing agencies, the overall observation on TA and training involving international consulting firms was that these consultants often play useful roles in providing advice on concepts and principles, and in sharing knowledge and international experiences. However, international consultants were less effective or relevant in the design and implementation of concrete reform plans and activities in China, as actual practice required a much deeper understanding and appreciation of the domestic operating environment and local conditions. Where appropriate, specific provisions should be included in the consultant selection process to encourage international consultants to associate with local firms to strengthen their capacity to deliver services more effectively.

In summary, when the sector is undergoing major changes and the borrower's capacity is building up quickly, flexibility should be built into the design of the TA component.

Financial Covenants: In the face of changes in circumstances, both the Bank and the Borrower should pay closer attention to the relevance of the financial covenants, and seek to make modifications (if necessary amendments) proactively rather than let prolonged non-compliance be the agent for change.

Environmental Aspects: When the environmental units had the full support of management at the highest level, and there was a culture of professionalism and understanding of the environmental aspects, it was easy to build upon this and implement the EMP.

Resettlement Aspects: For most groups and households affected by the project, their living conditions and income were at least restored if not improved. During the eight-year implementation period, there was not a single lawsuit on account of resettlement disputes. This was almost unprecedented in Hunan. Strong commitment by the various levels of government and the project owner, timely dissemination of information and early involvement of media and communities; comprehensive resettlement policies supported by consistent and transparent principles; adequate planning with regular updates based on feedbacks; and effective implementation arrangements all contributed to the smooth and successful implementation of the RAP.

9. Partner Comments

(a) Borrower/implementing agency:

Borrower:	People's Republic of China
Beneficiary:	Hunan Electric Power Company (HEPC), Leiyang Power Plant (LPP) and China Datang Group Company (CDGC)
Loan:	US Dollars 300 Million
Project ID:	P035698

Total Project – Initially Implemented by HEPC

Project Description

The project included four components: (a) the Phase II Leiyang Power Plant - supply and installation of two additional 300 MW anthracite-fired generating units at LPP; (b) reinforcement of the existing 220kV transmission systems include Changsha Furong Substation – this component would connect LPP and the Changsha BOT Power Plant to the Hunan Provincial Grid; (c) Technical assistance for engineering services for construction management, implementation of Hunan Electric Power Company's restructuring plan, and improvement of the financial management system; and (d) institutional development and training.

Project Objectives

The main objectives of the project included: to alleviate the power shortage in Hunan province through construction of two 300MW generation units; to improve the generation mix in a system dominated by seasonal hydropower; and to facilitate the retirement of ten small, aging, inefficient, and polluting generation units in the Hunan provincial power grid; to reinforce the existing transmission grid through construction of 794KM of 220KV transmission lines and 1920 MVA transformer capacity in order to meet the increasing demand in a reliable, economic and efficient manner; to upgrade the distribution network in Changsha urban district and to alleviate the overload situation in Changsha load center through the construction of the Changsha Furong Substation and affiliated distribution lines; to improve project implementation ability of HEPC; to promote power sector reform and power market reform; and to enhance HEPC's managerial, legal, technical and financial capabilities through technical assistance, institutional development and training.

Project Implementation and Outcome

Two important events happened during project implementation. The first was the East Asian financial crisis in 1999. The Changsha BOT Power Plant component was cancelled due to the main investor's

failure to provide financing. This resulted in a change in project scope. The second was the power sector unbundling in China that was enforced in 2002. As all assets associated with the Leiyang Power Plant were transferred to the China Datang Corporation, it resulted in a change in project beneficiary.

To-date, all components of the project has been successfully completed and the main objectives have basically been realized. The project is completed with high quality, and obtains satisfactory economic and social benefits.

The construction and installation of the two 300MW units in LPP (Units 3 and 4) were finished in June 2004. Unit 3 was commissioned in December 2003, and put into commercial operation in January 2004; Unit 4 was commissioned in June 2004, and put into commercial operation in November 2004. The construction periods of the two units were 33 months and 39 months respectively, and their commercial operations were both three months ahead of the revised schedule.

The project created a model of excellence in Chinese power plant constructions, and it made LPP the first one in Hunan with a total installed capacity exceeding 1,000MW. During the construction period, it kept a safety record for more than 1,000 days and no accident ever happened. The 517 segmented installation examined achieved a rate of excellence of 100%. Various parameters monitored including vibration, protection, and auto-service rate were superior to national standards. Unit 4 also created a national record for comparable 300MW units in that it only took 14 days from synchronization to the completion of the 168-hour trial operation.

The Leiyang Power Plant helps the optimization of generation mix in Hunan province: the proportion of thermal and hydro generation and the imbalance of generation output between dry season and wet season are improved. It also promotes the development of the local coal industry, which has important and beneficial influence on Hunan's economy and social stability. The ahead-of-schedule commercial operation of these two units also greatly alleviated the extremely difficult power supply situation during peak load in 2003 and 2004. The commercial operation of these two units made it possible for the retirement of some old, small, low efficiency and highly polluting thermal units.

The transmission reinforcement sub-projects also achieved satisfactory outcome. By March 2005, construction of all 17 transmission lines with a total length of 548km as well as 7 substations with a total capacity of 1860 MVA was completed. The existing 220KV network in Hunan province was reinforced. This transmission project not only provides additional transmission capacity for LPP, it also greatly enhanced security and stability of power supply in major cities in Hunan province, especially in the Changsha- Zhuzhou-Xiangtan area. Northern, central, and southern Hunan alongside the Beijing-Guangzhou railway and the Beijing-Zhuhai highway are fast growing areas in power consumption and the timely completion of relevant transmission lines and substations helps meet the increasing electricity demand in these areas, and alleviated bottlenecks. At the same time, this component eliminates the structural defect in the northern Hunan grid and satisfies the requirements on safety and stability of power grid operation to transmit power from the Huayue Power Plant to the grid and closely linked northern Hunan power grid with the Changsha-Zhuzhou-Xiangtan load center. Stability level of the power grid was upgraded from single-phase permanent short circuit standard to three-phase permanent short circuit standard. The project also makes it possible to integrate the southern Hunan grid, especially the construction of the Yongzhou ring-grid, which greatly improves the safety and stability level of the power grids in this area.

The Changsha Furong substation sub-project is located in the urban area of the provincial capital, and its construction plays a significant role in providing safe and stable power supply in Changsha city. In 2005,

electricity distributed through Furong substation accounted for 11.3% of the whole year's power consumption in Changsha city. During peak load period, the Furong substation undertook more than 18% of the highest load of the city. The operation of the Furong substation ensures the power supply capacity of 220KV main transformer of the city area during peak load period, alleviates the overload situation of the four 220KV substations nearby as well as the overload situation of nearby 110KV substations and distribution lines. The Furong substation was constructed in the load center, and its affiliated 110KV line reinforces the 110KV network in the city, establishes linkage between southern, central, and northern networks, and improves power supply capacity and quality. It also enables network rehabilitation in the load center, and enables more flexible and stable power supply.

The consulting services included in the TA program contributed considerably to the detailed design, interface coordination, finalization of the technical specifications, procurement of the main plant equipment and construction planning. It also helped the Hunan power system to make significant progress in restructuring. The training programs enhanced the capability of many people in the implementing agencies, including senior managers and technical specialists in various fields such as general management, financial management, power marketing, and power market.

Environmental protection and resettlement are also very successful. In particular, the environmental work of LPP achieved significant results. The emission of air pollutants (SO2, NOx, and TSP) was reduced year by year. At the same time, wastewater, ash, and noises are also under strict control. Environmental monitoring plan was established and monitoring equipment was in place, which ensured sustainable environmental protection. The resettlement work of the project also won good comments from the local governments. In accordance with the requirements of the Bank, the implementing agencies established resettlement steering commission and resettlement office. The OD 4.30 resettlement guidelines were completely and systematically studied and carried out. An internal monitoring review and an external monitoring evaluation were carried out each year. For the 21 sub-projects involving resettlement, which were implemented over a period of almost 8 years, not a single complaint or lawsuit has been filed to-date. This is quite rare in the power construction history in Hunan province. Through close cooperation with the Bank in resettlement work, HEPC gained valuable experience, which will help to improve our future resettlement work.

Experience Gained and Lessons Learned

Research on social and environmental impacts during project preparation, internal monitoring and review during project implementation, and project evaluation after completion are good practices and should be promoted in implementing other domestic projects.

"Put people first" is a basic policy in our country in constructing a harmonious society. With experience gained from the project, the benefits of affected people must always be considered first in the implementation of future domestic projects, and the law and relevant policies of the central and local governments should be carried out completely so the affected people can benefit from project construction.

During project implementation, we gained precious experience through comprehensive and close cooperation with the Bank officials and consultants, especially in management concepts and approach. They include: (a) in equipment procurement, to ensure fairness and equity, a strict bidding system including bidding method, working procedures and institutional set up was established for the company in accordance with the Bank's procurement guidelines. After implementation of the project, a fair and highly efficient procurement model was introduced for equipment procurement under other projects in HEPC, and that has upgraded our equipment procurement work; (b) introduction of the Bank's management concepts in project

implementation monitoring. First, an authoritative agency, the National Auditing Bureau was hired to carry out annual comprehensive financial auditing. Second, senior consultants were commissioned to carry out periodic and random examinations on project implementation. This not only helped settled some difficulties encountered in project implementation, but also provided real time project monitoring. This practice has been widely applied to the construction management of other major projects under HEPC; and (c) in the aspect of methodology and technical support in financial management, preparation of rolling 8-year financial projections was learned and popularized as a good practice. This brought about improvements to our financial management.

During the whole project implementation process, we have opportunities to meet many officials and specialists from the Bank, who are very familiar with the power industry, well experienced in financial and project management, and who fully understand the actual situations in China and are easy to communicate and cooperate with. The knowledge and the dedication of the Bank officials and specialists to their works have impressed everyone involved in HEPC. It is the common experience of everyone who is involved in the project that participation in a Bank project can enable us to learn much new knowledge and gain managerial experience. This will benefit a lot for our works in the future. It has been our pleasure working with the Bank.

The Leiyang Power Generation Plant Component

(which implementation and ownership were transferred from HEPC to LPP/CDGC after unbundling)

Component Description:

The Phase Two Leiyang Power Project is one of the key projects in the national Tenth Five Year Plan. It is located in Leiyang city, 240 km south to Changsha, Hunan. The Baisha Coal Mines Bureau is 3 km south of the power plant. The Leishui River is the main water source for LPP and local anthracite coal mines such as the Hongwei Coal Mine, Qifengdu Coal Mine, and Jiahe Coal Mine are the fuel suppliers. The fuel is delivered through the 2.3 km railway leased-line constructed and owned by the power plant. A 70 km 220kV transmission line connects the power plant to the Hunan power grid.

Project Objectives:

(a) Increase electricity supply in Hunan Province and improve the generation mix in a system dominated by seasonal hydropower through creation of an independent power company to develop a mine-mouth power plant in Leiyang that will supply the Hunan power grid through long-term contractual arrangements; (b) improve the efficiency of energy supply and use in the region by introducing modern technologies and implementing effective operations and maintenance practices and procedures in power generation, and reducing losses in the T & D systems of Hunan; (c) advance the power sector reform process in China by promoting the development of electricity trade in Hunan through adequate and market-oriented commercial arrangements; (d) diversify financing sources, improve the access of power entities to international financial markets, and encourage private-sector investment in existing and new power sector enterprises; and (e) increase local economic activity in Leiyang.

Component Implementation

The Leiyang Power Plant Phase Two Project is one of the successful World Bank financed energy development projects in China. The project is notable for its high construction speed, high construction quality and stable operation. Phase two also trained an experienced project team, which later benefited the

construction of Leiyang phase III. Leiyang Phase Two is consisted of two 300 MW coal-fired sub-critical units (Units 3 and 4). The construction of the two units started in 2001. Unit 3 was put into operation on December 16, 2003 and Unit 4 was synchronized to the system on June 9, 2004. These two units have been put into operation ahead of schedule. The new input greatly alleviates acute power shortages by providing efficient, reliable and environmentally sound power supply in Hunan in the summer of 2004.

Quick Construction Speed: The construction of both units was progressing in a high speed in two aspects. These two notable examples of high-speed construction are: (a) Best in Hunan for similar units: less than ninety days (90) from the initial firing to unit synchronization (Unit 4); and (b) Best in Hunan for 300MW units: only 32 days from the commissioning test to synchronization (Unit 4).

High Construction Quality: For procurement of the turbine and boiler equipment, LPP strictly followed the Bank's procurement guidelines. The consulting company BVI that is very experienced and professional on technical matters assisted LPP during bid evaluation and contract negotiation. The benefit of bidding is that high quality equipment is selected and contract price has been significantly reduced. LPP prepared the Bidding Management Regulations according to the World Bank's Procurement Guidelines. Thanks to the high quality equipment and qualified construction companies selected through bidding, the construction passed the quality acceptance test organized by China Datang Corporation in 2004. Compared to similar power plants, overall quality of LPP phase two is designated as "High Quality Project".

Component Outcome

Significant Economic Benefit: The LPP Phase Two budget approved by the State Planning Commission is 2.4billion Yuan. With the introduction of bidding and tendering system and design optimization the project was completed within budget. In the first operating years 2003 and 2004, the two units were running smoothly and yielded a benefit. Good operating performance has been maintained for three years during which the two units operate stably and produce significant economic benefits, and meet each of the technical/economic design indicators.

Major Power Supply to Hunan Grid: The two units were put into operation in 2003 and 2004 respectively. The total installed capacity of LPP is 1000MW, which is the biggest thermal power plant in Hunan Province. LPP is the major power supply to Hunan grid and also the load support power source in the grid. In 2004, serious power shortages occurred in Hunan Province. By operating the two units, LPP greatly alleviated the power shortage and met the demands for peak load during that summer. In early 2005, heavy icing damaged the Hunan grid and the transmission channels in northwestern Hunan collapsed. While most hydropower stations were unable to start up, the 1000MW LPP was put into full operation, which made up a quarter of the total generation capacity in Hunan Province. Its contribution to the safety of the Hunan Power Grid could not be replaced.

Promotion of the Local Economy: The Leiyang Power Project is located in Leiyang County, in the south of Hunan Province. Before construction of the project, the economic development there was quite slow. With the Project, the local coal enterprises are developed. Abundant employment opportunities are created for local residents and dramatic and rapid changes in the local economic situation are evident.

Sustainable Experience and Skills: During implementation, management and technical personnel involved in project construction have been trained through project activities. Such skills and experience benefits future development of LPP. Experience was gained in bidding, bid evaluation, contract negotiation, site construction and commissioning. Domestic and abroad training and technical assistance programs designed by the Bank on construction, financial and environmental management, operation and maintenance

were provided to technical personnel. The knowledge and experience gained from training and field practice proved to be very useful not only for the Project, but also for the future construction of LPP phase three. A large number of LPP's management and technical specialists have been promoted to new positions in other projects under Datang's Hunan Branch. Therefore the Project benefits the progress of LPP and also the development of the Datang Hunan Branch.

High Quality Environmental Management: Environmental objectives of the project had been achieved with the help of the Bank's environmental specialist and the contracted consulting institution. During execution of each environmental task designated in the appraisal report, LPP's awareness and commitment to environmental protection became stronger and stronger. In order to reduce the discharge of SO2 and NOx, desulphurizing equipment and denitrification equipment with the capability to handle the exhaust gas from phases one to three are planned to be installed along with the construction of Phase three. All the environmental facilities of phase two has passed the acceptance inspection organized by the State Environmental Protection Bureau in May 2005.

Satisfactory Project Resettlement: The phase two project consists of the construction of the power plant and ash yard. Affected villages are in Leiyang County. To assure land acquisition, a Resettlement office was established in both LPP and the Leiyang County Government. Dedicated officials have been assigned from the office to coordinate the relocation. Regular site visit and inspection by the Bank's resettlement officials and the consulting institute assure the smooth execution of the resettlement plan. Due to the human-oriented resettlement policy advocated by the World Bank and the dedicated work, the livelihood has been maintained and the living standard of the affected villagers has been greatly raised. The project also created job opportunities for the affected people and more employment in turn contributes to the dramatic economic development in the region.

During project implementation World Bank officials and specialists we work with are senior experts who are familiar with power engineering, project performance and the situation in China. LPP personnel cooperated with them and exchanged views freely. The knowledge and dedication of Bank officials to their jobs have impressed everyone involved. Those participated in the Project have a common understanding that the knowledge and management skills learned from implementing a Bank-financed project could benefit their future work. Everyone has a pleasant memory of his/her cooperation with the World Bank.

Recommendation. Due to the dedication of both the World Bank and the implementing agencies, there were great achievements on cost saving and quality control. The final estimated cost for both the Leiyang Thermal Power component and the T&D component is at least 40 percent lower than the appraisal estimates. Due to the cost savings, the Project has more advantages in construction cost and power price than similar projects in Hunan and China. Its sustainability is much more likely because of its competitiveness. Moreover, the implementation agencies' focus on construction management, safety and quality control played a critical role in accelerating implementation. The Project is the best among similar units, not only in construction speed but also in quality. The Project has also been honored as a "High Quality Project". We therefore recommend the Bank to highlight the above two points associated cost savings and quality control and revise the ratings of the above to "***Highly Satisfactory***".

(b) Cofinanciers:
N/A

(c) Other partners (NGOs/private sector):
N/A

10. Additional Information

N/A

Annex 1. Key Performance Indicators/Log Frame Matrix

Objective	Outcome/Impact Performance Indicator	Appraisal Baseline (1996)	Progress in Last PSR (Actual 12/31/04)	End-of-Project Targets/ Actuals at the time of	
				Appraisal	Completion
Infrastructure bottleneck reduced	Reduction in lost production in Hunan (Yuan billion)	2.3	N/A	2004: 1.5	2004: 4.4 2005: 5.3
	Increase in production attributable to Leiyang project (Yuan billion)	-	N/A	2003: 12.4 2005: 19.5	2005: 17.9
Power shortages remedied by providing efficient, reliable and environmentally sound supply	Leiyang Unit 1 availability Unit 2 availability		90% 93%	2005: 88% 2005: 86%	2005: 95% 2005: 99%
	Reliability of transmission network (faults/100km/year on 220 kV system)	0.99	0.4	2004: 0.7	2005: 0.75
	Reduction in load shedding	19,239	900	2004: 520	2004: 78,300 2005: 27,137
	Improved fuel efficiency (coal consumption: g/kWh)	434	366	2004: 380	2004: 366 2005: 348
	Reduction in emission rates for air pollutants (gms/kWh): SO_2 NOx TSP	5.27 5.37 9.18	2002: 5.32 2002: 5.13 2002: 4.64	3.64 4.95 5.32	Data not available since LPP was transferred
Generation units constructed	Two 300 MW units constructed and operational	-	-	12/2002	Unit 1: 6/2004 Unit 2: 11/2004
Transmission reinforcement completed and operational	200kV lines constructed, including connections of Leiyang and Changsha to grid	-	-	794 km by 12/2002	547 km incl. Leiyang to grid; Changsha partially dropped
	9 new 200kV substations totaling 1,680 MVA constructed; 2 existing substations extended by 240 MVA	-	-	By 2002	7 new totaling 1,860 MVA, 1 expended by 120
Retirement of small, aging, inefficient and polluting plants	Decommissioning of 10 units totaling 300 MW by 2003	-	-	1998: 4x25, 2000: 4x25 2002: 1x50 2003: 1x50	1998: 4x25 1999: 2x25 2000: 2x25 2006 Plan: 2x50
HEPC's reform plan implemented	Separation of all generation units from T&D	-	-	12/2000	1/2003, 3 hydro plants retained
	HEPC converted into a limited liability company engaged in T&D and dispatching	-	-	12/2000	Implemented in 1/2003
	Formal incorporation of Leiyang Power Generation Plant	-	-	12/1999	Transferred to Datang in 2003
	Leiyang/HEPC PPA signed	-	-	12/2000	Started in 2003
	Efficient wholesale generation tariffs implemented	-	-	3/2001	Implemented in 2003
FM system upgraded and operational	System designed, automated, implemented and staff trained in use	-	-	By 2001	Implementation underway, using internal resource
Capacity enhanced	Training program implemented (#of participants)	-	-	407	548

Annex 2. Project Costs and Financing

2a. Project Cost by Component (in US$ million equivalent)

	Appraisal Estimate [1]	Actual/Latest Estimates [2]	Percentage of Appraisal
Leiyang Generation Component			
Works	88.25	104.2 [3]	118%
Equipment and Materials	231.2	175.6	76%
Services	10.6	0.6 [4]	6%
Total Base Cost	330.0	280.5	85%
Total Cost	473.9	287.1	61%
Total Financing Required	518.7	297.1	57%
Transmission Component			
Works	8.7	31.6	362%
Equipment and Materials	151.9	100.6	66%
Total Base Cost	160.7	132.2	82%
Total Cost	204.9	132.2	65%
Total Financing Required	228.5	138.0	60%
Total Project			
Total Base Cost	490.7	412.7	84%
Total Project Cost	678.8	419.3	62%
Total Financing Required [5]	747.2	435.1	58%

1/Figures might differ from the PAD slightly due to rounding.

2/Equipment and materials imported under the project were exempted from custom duties, and the majority of them were also exempted from VAT. A portion of local equipment purchased was also exempted from (or reimbursed for) VAT. Actual contract price for equipment include all applicable taxes.

3/ Actual cost includes design fees previously excluded.

4/ Does not include $1.65 million grant funding used for TA during project preparation, and includes $240,000 for TA and training for the TRANSMISSION component

5/Total financing required = Total project cost + Interest during construction;
Total project cost = Total base cost + Physical and price contingencies + Taxes and duties.

2b. Project Cost by Procurement Arrangements [1] (in US$ million equivalent)

		Procurement Method		NBF[3]	Total Cost
		ICB	Other [2]		
At Appraisal	Works			105.4	105.4
	Equipment and Materials	288.0	6.5	161.3	455.8
		(288.0)	(6.5)		(294.5)
	Services		5.5	5.8	11.3
			(5.5)		(5.5)
	Total Project Cost	288.0	12.0	272.4	572.4
		(288.0)	(12.0)		(300.0)
Actual/Latest Estimates	Works			135.9	135.9
	Equipment and Materials	136.7		139.5	276.2
		(136.7)			(136.7)
	Services		0.6		0.6
			(0.6)		(0.6)
	Total Project Cost	136.7	0.6	275.4	412.7
		(136.7)	(0.6)		(137.3)

1. Figures in parenthesis are the amounts financed by the Bank loan. All appraisal estimates include contingencies. Total project cost used in Procurement table in the PAD is net of taxes and duties (an anomaly). For comparability, the Actual/Latest estimate figures in the table have also been adjusted to exclude taxes and duties.
2. Other includes Limited ICB, International shopping, National shopping, Direct Contract, and Consultant services.
3. NBF = Not Bank financed

2c. Project Financing by Component (in US$ million equivalent)

	Appraisal Estimates	Actual/Latest Estimates [1]	Percentage of Appraisal
HEPC	149.7	27.6	18%
CDGC	-	59.7	-
Domestic Borrowing	297.5	210.5	71%
Bank	300.0	137.3	46%
Total	747.2	435.1	58%

[1] Figures may not add exactly due to rounding.

Annex 3. Economic Costs and Benefits

The project was primarily justified on least cost analysis. For the generation component, which comprised about 69% of the total estimated project cost, the study covered the development of the system during 1997-2025, with special focus on the investment required during 1997-2010 planning period.

A cost-benefit analysis was also carried out at appraisal to confirm the economic viability of the LPP Phase II project. The analysis was based on the estimated economic cost of the generation component (in 4,366 million 1997 Yuan (or $526m)) and the expected sales revenue to be generated valued at the bulk rate of supply (Y5,952 million (or $717m) based on bulk rate of 29.1 fen/kWh and 6,850 hours/year. Assumptions on tariffs were made based on prevailing pricing policies. The calculation yielded an internal economic rate of return (IERR) of 19.4%.

At completion, the weight of the generation component was 68% of total project cost. Using a similar methodology, a re-estimation yielded an IERR of 15.4 % (refer to Annex 3). The lower estimated return was mainly the result of a stretched out construction period and delayed completion. The level was within the range established in the risk analysis conducted during appraisal, and was considered adequate.

Year	Energy	Project Costs				Benefits	Net Benefit
		Investment	Fixed O&M	Fuel	Total		
	GWh	Yuan Million					
2001		113.9			113.9		-113.9
2002		758.2			758.2		-758.2
2003		1,195.8			1,195.8		-1,195.8
2004	2,405	514.3	77.5	282.9	874.7	616.0	-258.7
2005	3,800	74.3	79.7	610.3	764.2	1,069.0	304.8
2006	3,800	32.1	80.7	590.6	703.3	1,132.5	429.2
2007	3,800		80.7	581.7	662.3	1,132.5	470.2
2008	3,800		80.7	572.7	653.4	1,132.5	479.2
2009 to 2029	3,800		80.7	572.7	653.4	1,132.5	479.2
Total	**97,404.7**	**2,688.6**	**2,092.9**	**14,665.1**	**19,446.6**	**28,866.0**	**9,419.4**
Internal Economic Rate of Return (IERR) =					**15.4%**		

Key Values/Assumptions Used	
Exchange rate	Y8.28/USD
Coal consumption	320 gce/kWh
Coal price on site	Y471/ton
Operating hours	/year
Tariff (net of VAT)	Y0.315/kWh
Fixed O&M rate	3.0%
Discount rate	12%
Investment stream net of taxes and financing charges	

Annex 4. Bank Inputs

(a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating	
Month/Year	Count	Specialty	Implementation Progress	Development Objective
Identification/Preparation				
01/20/1997	*8*	Principle/Energy Specialist (2), Power Engineer; Principle/Environmental Specialist (2); Restructuring Specialist; Operations Officer; Resettlement Specialist	S	S
Appraisal/Negotiation				
06/29/1997	*8*	Principle/Energy Specialist (2); Sr./Power Engineer (2); Principle Environmental Engineer; Restructuring Specialist; Operations Officer; Resettlement Specialist	S	S
Supervision				
10/30/1998	*4*	FINANCIAL (1); ENGINEER (2); INSTITUTIONAL (1)	S	S
05/15/2001	*2*	SENIOR ENGINEER (1); RESETTLEMENT SPECIALIS (1)	S	S
09/20/2001	*2*	SENIOR ENERGY SPECIALI (1); LEAD ENERGY SPECIALIST (1)	S	S
04/09/2002	*3*	SENIOR ENERGY SPECIALI (1); OPERATIONS OFFICER (1); FINANCIAL SPECIALIST (1)	S	S
04/10/2003	*1*	POWER ENGINEER (1)	S	S
11/19/2003	*3*	ENERGY SPECIALIST (1); ENERGY ECONOMIST (1); POWER ENGINEER (1)	S	S
04/22/2004	*4*	RESETTLEMENT SPECIALIS (1); POWER ENGINEER (1); FINANCIAL SPECIALIST (1); ENVIRONMENTAL SPECIALI (1)	S	S
ICR				
02/21/2006	*3*	Sr. Energy Spec; Financial Analyst, Resettlement Spec.	S	S

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US$ ('000)
Identification/Preparation	N/A	
Appraisal/Negotiation	N/A	348
Supervision	34	439
ICR		
Total	34	787

Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	Rating				
☐ *Macro policies*	○ *H*	○ *SU*	○ *M*	○ *N*	● *NA*
☐ *Sector Policies*	○ *H*	○ *SU*	● *M*	○ *N*	○ *NA*
☐ *Physical*	○ *H*	● *SU*	○ *M*	○ *N*	○ *NA*
☐ *Financial*	○ *H*	● *SU*	○ *M*	○ *N*	○ *NA*
☐ *Institutional Development*	○ *H*	● *SU*	○ *M*	○ *N*	○ *NA*
☐ *Environmental*	○ *H*	● *SU*	○ *M*	○ *N*	○ *NA*
Social					
☐ *Poverty Reduction*	○ *H*	○ *SU*	○ *M*	○ *N*	● *NA*
☐ *Gender*	○ *H*	○ *SU*	○ *M*	○ *N*	● *NA*
☐ *Other (Please specify)*	○ *H*	● *SU*	○ *M*	○ *N*	○ *NA*
☐ *Private sector development*	○ *H*	○ *SU*	○ *M*	● *N*	○ *NA*
☐ *Public sector management*	○ *H*	○ *SU*	○ *M*	○ *N*	● *NA*
☐ *Other (Please specify)*	○ *H*	○ *SU*	○ *M*	○ *N*	○ *NA*

Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

6.1 Bank performance	*Rating*			
☐ *Lending*	○ *HS*	● *S*	○ *U*	○ *HU*
☐ *Supervision*	○ *HS*	● *S*	○ *U*	○ *HU*
☐ *Overall*	○ *HS*	● *S*	○ *U*	○ *HU*

6.2 Borrower performance	*Rating*			
☐ *Preparation*	○ *HS*	● *S*	○ *U*	○ *HU*
☐ *Government implementation performance*	○ *HS*	● *S*	○ *U*	○ *HU*
☐ *Implementation agency performance*	○ *HS*	● *S*	○ *U*	○ *HU*
☐ *Overall*	○ *HS*	● *S*	○ *U*	○ *HU*

Annex 7. List of Supporting Documents

- Summary of Resettlement Completion Report
- Environment Completion Report
- Project progress reports
- Project files, containing full records of project preparation and supervision aide-memoires and reports.