

**REPORT AND RECOMMENDATION
OF THE
PRESIDENT
TO THE
BOARD OF DIRECTORS
ON A
PROPOSED LOAN
TO THE
POWER FINANCE CORPORATION LIMITED, INDIA
FOR THE
STATE POWER SECTOR REFORM PROJECT**

November 2002

CURRENCY EQUIVALENTS

(as of 15 November 2002)

Currency Unit	–	Indian rupee/s (Re/Rs)
Re1.00	=	\$0.0207
\$1.00	=	Rs48.20

ABBREVIATIONS

ADB	–	Asian Development Bank
CAR	–	capital adequacy ratio
CIDA	–	Canadian International Development Agency
DSCR	–	debt-service coverage ratio
DFID	–	Department for International Development
EAPU	–	Externally Aided Projects Unit
ED	–	electricity department
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
IEE	–	initial environmental examination
IPP	–	independent power producer
LIBOR	–	London interbank offered rate
OFAP	–	operational and financial action plan
OPS	–	Operational Policy Statement
PFC	–	Power Finance Corporation Limited
RBI	–	Reserve Bank of India
R-OFAP	–	reform-oriented operational and financial action plan
ROR	–	rate of return
R&M	–	renovation and modernization
SEB	–	state electricity board
SERC	–	state electricity regulatory commission
T&D	–	transmission and distribution

WEIGHTS AND MEASURES

kWh	–	kilowatt-hour (1,000 watt-hours)
MW	–	megawatt (1,000 kilowatts)

GLOSSARY

crore	–	10,000,000
Paise	–	Rs0.01

NOTES

- (i) The fiscal year of the Government ends on 31 March. FY before a calendar year denotes the year in which the FY ends. Thus, FY2003 starts on 1 April 2002 and ends on 31 March 2003.
- (ii) In this report, "\$" refers to US dollars.

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LOAN AND PROJECT SUMMARY

Borrower	Power Finance Corporation Limited (PFC)
Classification	Poverty classification: Other. Thematic: Economic growth, Good governance.
Environment Assessment	Category B.
Project Description	<p>The proposed loan constitutes a line of credit to PFC, a development finance institution dedicated to power sector financing. Subborrowers will be state electricity boards (SEBs) and other state-level power utilities that have given a firm commitment to PFC on undertaking power sector reforms. The Asian Development Bank (ADB) will provide loan assistance to the selected subborrowers, through PFC, to meet part of their financing requirements for reducing system losses, enhancing operational flexibility and efficiency, and improving the delivery of services to consumers. The borrowing limit, at any given time, is linked to the reform milestone corresponding to that stage of the agreed reform process.</p> <p>The subprojects will consist of (i) transmission and distribution rehabilitation, (ii) transmission and distribution facilities required for system expansion and reinforcement, and (iii) renovation and modernization of existing generating plants.</p>
Rationale	<p>It is being recognized that comprehensive sector reforms are needed to improve the performance of India's power sector. ADB has already initiated such reforms in Gujarat and Madhya Pradesh and is in the process of doing so in Kerala. Considering that there are 29 states and 6 union territories, most of which are in need of advice and assistance to undertake reforms, it is necessary to complement the ongoing efforts by focusing on more states.</p> <p>PFC, which started lending to the power sector in 1988 and commenced promoting reforms in 1996, is heavily involved with state-level power utilities. Based on its previous performance, and staff skills and experience, PFC appears to be the best agent to promote state-level power sector reforms. The proposed loan aims to utilize PFC's experience and expertise in reform-oriented lending, thereby supplementing ADB's own staff and financial resources. Lending through PFC will allow ADB to facilitate sector reforms in more utilities than would otherwise be possible. The proposed loan is also in synergy with the Government's efforts in promoting power sector reforms through mechanisms such as the Accelerated Power Development and Reform Program.</p>

Objectives	The overall objective of the ADB assistance is to help improve the state power sector in India so that it becomes financially self-sustaining and capable of adequately providing its share of services to the country's economic and social development. The immediate objectives are to (i) promote power sector reforms in a few selected states; (ii) help establish independent regulatory bodies; and (iii) functionally unbundle the sector entities so that they become commercially and operationally autonomous and efficient, and financially viable. To help achieve these objectives, ADB will provide financial assistance, channeled through PFC, to the selected SEBs to meet part of their financing requirements needed to reduce system losses, enhance operational flexibility and efficiency, and improve the delivery of services to consumers.
Financing Plan	ADB will finance 60% of the total subproject cost. The remaining funds will come from the subborrowers' own resources, which may include further PFC loans. The maximum lending for any single subborrower will be 40% of the total ADB loan unless otherwise agreed by ADB.
Loan Amount and Terms	A loan of \$150 million from ADB's ordinary capital resources will be provided under ADB's LIBOR-based lending facility. The loan will have a 20-year term including a grace period of 5 years, with repayments linked to actual disbursements under the Loan, an interest rate determined in accordance with ADB's LIBOR-based lending facility, a commitment charge of 0.75% per annum, a front-end fee of 1.0%, and such other terms and conditions set forth in the draft Loan Agreement.
Allocation and Relending Terms	PFC will relend ADB funds in accordance with individual reform-oriented operational and financial action plans (R-OFAPs) agreed with the eligible subborrowers, and PFC's Operational Policy Statement. The subloans will have a maximum maturity period of 15 years, including a grace period not exceeding 5 years.
Period of Utilization	Until 30 June 2008.
Estimated Project Completion Date	31 December 2007

Implementation Arrangements

PFC will be the Executing Agency for the proposed loan. Its chairperson and managing director will be responsible for the overall management of the Project. Day-to-day implementation of the Project will be carried out by the relevant divisions under guidance from their respective directors as follows: formulation of and obtaining approval for R-OFAPs, determining maximum lending limits for R-OFAP milestones, and monitoring of their compliance will be the responsibility of the Institutional Appraisal and Development Division; appraisal and approval of subprojects and monitoring of their implementation, including procurement activities, will be the responsibility of the Projects Division. The Environmental Assessment and Monitoring Cell in the Externally Aided Projects Unit will be responsible for environmental and social assessment of subprojects and the monitoring of their environmental and social impact mitigation measures. Coordination of all project-related matters between ADB and PFC will be the responsibility of the Externally Aided Projects Unit.

Executing Agency

Power Finance Corporation Limited

Procurement

Procurement for goods and services financed under the ADB loan will follow ADB's *Guidelines for Procurement*. For contracts valued at \$5 million or more, subborrowers will follow international competitive bidding procedures. For contracts below \$5 million, PFC will ensure that competitive and transparent procedures will be followed by subborrowers.

Procurement will be from ADB member countries only.

Project Benefits and Beneficiaries

The financial health of many SEBs has been deteriorating due to insufficient cost recovery, inadequate tariffs, and high operating costs. Consequently, most of the SEBs are now being restructured under various initiatives to achieve financial viability and improve operational efficiency. The proposed loan will be used to support these reform-minded SEBs. The subprojects to be financed under the proposed loan will contribute to financial recovery through increased efficiency, lower transmission and distribution losses, and better metering and collections. These improvements are expected to improve the financial condition of the assisted agencies and will lead to improved delivery of services to the final consumers.

The indirect benefits attributable to the proposed loan are also substantial. For example, tariff rationalization by independent regulatory bodies will result in more equitable tariff levels across consumer categories, leading to efficient allocation of financial and economic resources. Improvements in the quality of power supply will enhance agricultural production and will discourage the

use of inefficient captive power generation by agricultural and certain industrial consumers. Finally, the tariff decisions by independent regulatory bodies and a stable power supply, through system improvements, will encourage more private sector participation both in the power sector and in other parts of the economy.

Risks and Assumptions

The main risk is the financial viability of SEBs and hence of PFC. PFC's asset quality is vulnerable to the poor creditworthiness of its SEB clients. PFC has attempted to mitigate this credit risk by securing its loans through escrow account arrangements and state government guarantees. Escrow account arrangements cover 1.25 times the present and future debt service of SEBs owing money to PFC. To further minimize this risk, PFC will select subborrowers based strictly on the proposed R-OFAP mechanism and ensure timely risk control management. These efforts are expected to minimize the associated risks.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the Power Finance Corporation Limited (PFC), for the State Power Sector Reform Project¹. The loan will be guaranteed by India.

II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

A. Sector Performance²

1. The Power Sector Setup

2. The Ministry of Power of the Government of India (the Government) provides overall guidance to the sector. The recently established Central Electricity Regulatory Commission is empowered to regulate the sector at the national level, including central power utilities in accordance with the Electricity Regulatory Commission Act, 1998. The central power utilities include the National Thermal Power Corporation, National Hydroelectric Power Corporation, and Nuclear Power Corporation, which are engaged in generation, and the Powergrid Corporation, which is engaged in interstate power transmission. The Government also owns financing institutions devoted solely to power sector lending such as PFC and the Rural Electrification Corporation. Recently, the Government established the Power Trading Corporation, to be responsible for power trading among states and between states and central power utilities.

3. At the state level, the state governments control the sector through state electricity boards (SEBs)³ and electricity departments (EDs). These SEBs and EDs are responsible for generation, transmission, and distribution, usually within their own states and territories. The central power utilities own and operate 30% of the country's total generation capacity, while SEBs and EDs have 59% of the total. In addition, five privately owned utilities, operating in certain urban centers and responsible for power distribution within their franchised areas, together with some independent power producers, have a share of 11% of generation.

2. Sector Performance

4. The objectives that have been set for the power sector in the Government's recent five-year plans have not been fully met. The main objective of the most recent plans was to ensure that the anticipated demand for electricity was met adequately and in a reliable and cost-effective manner. Power sector performance, measured using this objective as the yardstick, has not been satisfactory.

a. Technical Performance

5. In terms of capacity addition, the performance during the Eighth Plan (FY1993–1997) was only 54% of target, having added only 16,422 megawatts (MW) instead of the targeted 30,538 MW. The Ninth Plan envisaged a total addition of 40,245 MW during the FY1998–2002 period, comprising 11,909 MW by central sector agencies, 10,748 MW by state utilities, and 17,588 MW by the private sector independent power producers (IPPs). However, the actual capacity addition fell far short of target, with the central sector meeting only 37.8% and the private sector 28.8% of target. The state sector performed better, achieving 87.9% of target. Given the SEBs' difficulties associated with establishing adequate escrow accounts to service

¹ The project framework is in Appendix 1.

² Appendix 2 gives a detailed description and analysis of the sector.

³ Seven out of these SEBs have been restructured into separate generation, transmission, and distribution entities.

power purchase contracts and the attendant problems in achieving financial closure for IPP projects currently in India, realizing the full IPP contribution to the generation addition appears to be unlikely in the immediate future.

6. While new generation addition has fallen short of target, the existing generating plants, mainly coal-fired thermal power plants, have shown improved performance during the recent past. With the renovation and modernization (R&M) program for thermal power stations, introduced in the early 1990s, the plant load factor⁴—a performance indicator—has increased from 64.4% in FY1997 to 69.9% in FY2002. According to the Common Minimum National Action Plan (para. 10), the overall plant load factor was expected to increase to a minimum of 65% for state-owned utilities and to a national average of 70% by 2002. However, given the substantial shortage in capacity addition, these improvements in the performance of existing generating plants are inadequate to narrow down the demand-supply gap. Although, by the end of FY2002, India had a total installed capacity of 105,000 MW, there was a peak power deficit of 12.6% and an energy deficit of 7.5%. Per capita electricity consumption stood at 355 kilowatt-hours (kWh) in FY2002, compared to, for example, 719 kWh for the People's Republic of China.

7. Operational performance, measured in terms of transmission and distribution (T&D) losses, has also not been satisfactory. T&D losses are reported to have increased from 24.5% in FY1997 to 27.8% in FY2002 for the entire country. In the absence of adequate metering arrangements, especially for agricultural consumers, part of the losses used to be lumped together with agricultural consumption. The actual losses are, therefore, thought to be much higher, with some SEBs now reporting T&D losses as high as 45–57%.⁵ The major reasons for such high losses are pilferage of energy through unauthorized connections and tampering of meters, and technical losses originating from overloaded distribution networks.

b. Financial Performance

8. Since the SEBs account for almost 80% of commercial electricity sales in the country, the financial performance of the entire sector, including that of central sector agencies, is heavily dependent on the performance of the SEBs. Under the Electricity (Supply) Act of 1948, amended in 1984, the financial performance of the SEBs used to be measured in terms of rate of return (ROR) on net fixed assets with a mandated minimum ROR of 3%. However, none of the SEBs achieved this mandated minimum without a subsidy from their state government, and only Karnataka achieved a 3% ROR with the government subsidy. All the others posted negative RORs. As indicated in Table 1 below, the consolidated performance of all SEBs shows that the minimum required value has not been achieved during the recent past, and indeed, deteriorated over the period indicated. The major reasons for this unsatisfactory financial performance were the increasing gap between the cost of supply and the average tariff, and the decreasing recovery rate. These figures stood at Rs1.10 per kWh and 68.6%, respectively, in FY2002.

⁴ Defined as the ratio of actual capacity utilization of the plant to its rated capacity utilization.

⁵ For example, T&D losses for Delhi are reported to be 57%.

Table 1. Financial and Operating Performance of State Electricity Boards

Fiscal Year	Rate of Return (%)	Gross ^a Subsidy (Rs billion)	Cost of Supply (paise/kWh)	Average Tariff (paise/kWh)	Agriculture Tariff (paise/kWh)	Cost Recovery (%)	T&D Losses (%)
1994	-12.3	111	149.1	116.7	17.9	78.3	20.2
1995	-13.1	135	163.4	128.0	18.8	78.3	21.1
1996	-16.4	168	179.6	139.0	19.0	77.4	22.3
1997	-19.6	200	215.6	165.3	21.2	76.7	24.5
1998	-22.9	243	239.7	180.3	20.2	75.2	24.8
1999	-34.2	288	263.1	186.8	21.0	71.0	26.5
2000	-43.1	328	305.1	207.0	22.6	67.8	30.8
2001	-39.1	370	327.2	226.3	35.4	69.2	29.9
2002	-44.1	427	349.9	239.9	41.5	68.6	27.8

T&D = transmission and distribution.

^a Subsidy to agricultural and residential customers.

Source: *Annual Report on Working of State Electricity Boards & Electricity Departments*. 2002. Planning Commission.

9. The poor financial performance of the SEBs and the resulting shortage of liquidity has also adversely affected their operational efficiency and led to increasing T&D losses. With the limited financial resources available, the tendency of most of the SEBs had been to invest a larger proportion in generation to address the demand-supply gap and less in transmission and distribution. Over the years, this approach has led to inadequate distribution facilities resulting in overloading, inadequate maintenance, high T&D losses, and poor supply reliability, which in turn led to insufficient revenue—thus resulting in a vicious circle.

B. Key Problems and Opportunities

1. Structural Weaknesses of the Sector and Government Strategy

10. The main reason for the overall unsatisfactory performance of the sector can be attributed to structural weaknesses. For more than half a century, the Indian Electricity Act of 1910 and the Electricity (Supply) Act of 1948 provided the basic framework for power sector operations. They provided for the establishment of SEBs, EDs, and central sector utilities and contributed to the current status of development of the sector serving a population of more than 1 billion. However, with the worldwide changes in economic and financial imperatives and technological developments, the sector needed comprehensive reforms to provide the flexibility required to meet the challenges that lay ahead. These challenges included achieving financial autonomy and viability, good governance, attracting private sector investment, and finally, providing a good quality supply to an increasingly demanding population. The Government's initial approach to address these issues was not comprehensive enough. For example, to promote private sector participation in generation projects, the Government, in 1991, amended certain parts of the Electricity Act, 1910 to facilitate mobilization of domestic and foreign private funds and to allow incentives such as high returns on investments. Although there was some initial enthusiasm from the private sector, these measures have not resulted in more than 6,800 MW of capacity addition so far. The poor financial performance of the SEBs did not provide sufficient comfort to potential investors. In 1993, as a result of efforts made by the National Development Council,⁶ a high-level committee on power was constituted. In its report, submitted in October 1994, the committee recommended (i) organizational reforms at the state level aimed at unbundling generation, transmission, and distribution operations of SEBs and commercialization of the ensuing entities; (ii) organizational reforms at the national and regional levels aimed at freeing the central sector agencies from tight government control and at reducing the Government's equity in these agencies so as to enable participation of the private

⁶ The National Development Council is India's highest political body comprising the chief ministers of all the states in India, and chaired by the Prime Minister.

sector on a joint-venture basis; (iii) large-scale involvement of the private sector in generation and transmission, with sponsors selected through transparent and competitive bidding procedures; (iv) creation of national and regional tariff boards to take over the responsibility for tariff setting independently of central government and state government control; and (v) progressive phasing out of subsidies to agricultural consumers. These recommendations ultimately led to the adoption by the National Development Council of a Common Minimum National Action Plan for Power in 1996. To operationalize some of the recommendations, the Electricity Regulatory Commissions Act was passed in 1998 enabling the establishment of independent regulatory bodies at the central and state levels. Although this was a significant step toward improving the sector, it was not comprehensive enough to cover complete sector restructuring. The Government set up the Central Electricity Regulatory Commission under the Act, to be responsible for regulating power sector operations at the national level, related to generation and interstate transmission. The state governments were given the option to set up their own state electricity regulatory commissions (SERCs) under the Act or under bills to be passed by their own legislative assemblies. As a result of these initiatives and sometimes on their own, some states have taken steps to reform their power sectors. Foremost among them was Orissa, which, with World Bank assistance, completely unbundled its SEB and established the country's first SERC in 1996. Reforms in Orissa were followed by similar reforms in Haryana, Andhra Pradesh, Karnataka, and Uttar Pradesh with World Bank assistance and in Gujarat and Madhya Pradesh with ADB assistance.

11. To promote more comprehensive reforms in the power sector, the Ministry of Power has finalized the draft Electricity Bill 2001. As with concurrent subjects (Appendix 2), consultations have been held with state governments on the contents of the draft and the final version was presented to Parliament in 2001.⁷ This Bill attempts to consolidate previous acts relating to all power sector operations including the setting up of independent generation, transmission, and distribution companies as well as regulatory agencies; national and state-level power sector planning; consumer protection and dispute resolution; and safety aspects. Once enacted, the Bill will repeal previous electricity acts, thereby providing a single comprehensive body of legislation for the entire range of sector operations. As with previous acts, the Bill provides for any state government to hold in abeyance within its territory, provisions of the Bill for a period not exceeding 6 months from the date of enactment of the Bill in order to address any transitional issues.

12. The other notable features of the Bill are (i) open access to transmission systems; (ii) compulsory metering of all consumers within 2 years of enacting the Bill; (iii) facilitating the entry of power traders as opposed to distribution service providers; (iv) prioritizing the use of proceeds from privatizing power sector assets; and (v) promoting more targeted and transparent subsidies to the rural and economically weaker consumers. While providing a comprehensive framework for improvement of the power sector, the Bill also provides the necessary flexibility to state governments to determine their own pace and priorities for sector reform. However, to accelerate the state-level reforms, the Government has also established a number of other initiatives such as the Accelerated Power Development and Reform Program. Under this Program, state governments and their SEBs can use additional federal funds for selected types of power projects, based on their commitment to reforms under memorandums of agreement signed with the central Government.⁸

⁷ The Bill is being studied by a Standing Committee of Parliament.

⁸ PFC is one of the agencies designated for implementing the Accelerated Power Development and Reform Program.

2. Lessons Learned

13. Operations of ADB and other aid agencies in the power sector in India have been generally successful from a project point of view; i.e., the projects concerned have been completed, although with implementation delays, and performed to the expected technical levels. Although operations of the project components, taken individually, have been satisfactory, the overall sector performance, in terms of delivering a high quality and reliable power supply, continued to deteriorate. This situation was primarily on account of (i) highly distorted tariff setting undermining cost recovery; (ii) government rules and regulations, and government control of SEBs, inhibiting their performance; and (iii) the noncommercial setup of the sector that failed to attract private sector players to step in to bridge the gap between demand and supply or into other operational areas. The Government and other key players were beginning to realize that unless the structural framework of the sector setup was modified to remove the above impediments, long-term sustainable improvements could not be achieved.

14. The policy reforms required for comprehensive sector restructuring could not be introduced earlier for a number of reasons. First of all, the India power sector was not yet ready for reforms: there was no consensus among concerned agencies on what should constitute reforms until the adoption of the Common Minimum National Action Plan, and the necessary legislation and financial incentive mechanisms were not in place. Most important, SEBs or their state governments were not feeling the financial crunch as they do now. The compelling reasons for power sector reforms are the SEB financial burden on state governments' budgets and the resulting shortage of funds for other development needs. It is therefore evident that the opportunity offered by these events be made use of to turn the sector around.

15. The project completion report⁹ of the previous loan to PFC indicated a number of lessons to be learned. These included (i) the need for comprehensive reforms and restructuring of the power sector; (ii) PFC's limited leverage to influence the states to adopt key policy changes; (iii) the importance of compliance with loan conditions prior to subloan approval; (iv) recommendations on financial criteria for subproject selection; and (v) the need to have a sufficiently long list of subprojects before loan approval. These lessons have been taken into consideration during the project design and the subsequent discussions with PFC.

3. Asian Development Bank Operational Strategy

16. ADB's overall operational strategy for India consists of supporting efforts to achieve higher sustainable economic growth to promote employment and reduce poverty. Its contribution to higher growth focuses on improving supply-side efficiency of the economy, especially by reducing bottlenecks in key infrastructure sectors. Emphasis is on improving the policy, institutional, and regulatory framework so as to enhance the efficiency of public sector operations and to encourage private investment.

17. ADB's strategy for India was revised in 1996 to accommodate the need for a portion of its assistance to be provided in a systematic and comprehensive manner at the subnational or state level. This need reflected the facts that (i) a geographic focus, together with the ongoing selective sector focus, enables ADB to maximize its development impact both in the states concerned and, through the demonstration impact of its operations, in other states as well; (ii) state-level economic reforms, which have been lagging behind initiatives taken by the Government, needed support and incentives; and (iii) the states have considerable autonomy and have major legislative, administrative, and fiscal responsibilities in many of the economic and social sectors. Accordingly, ADB is building up the reform process from the grassroots by considering assistance to those states that have demonstrated the political will to

⁹ ADB. 2001. *Project Completion Report on the Power Efficiency (Sector) Project*. Manila.

substantially reform their public sector operations, and by assisting them to operationalize these reforms. Gujarat, Madhya Pradesh, and Kerala have been initially identified for ADB's holistic support.¹⁰ ADB-assisted power sector reforms in the first two states include adopting state-level reform bills, establishing and operationalizing independent regulatory bodies, unbundling sector entities along functional lines, rationalizing tariffs, and 100% metering of consumers.

18. The proposed loan is designed to complement the Government's efforts in promoting reforms in more states. While direct assistance to the power sector at the state level is being continued, with Assam being considered as the fourth state, assistance through suitable financial intermediaries is considered as a second option. PFC has been selected as the agent to leverage reforms since it is very active in state-level power sector reforms and it is also the premier development finance institution exclusively dedicated to the sector. Through PFC, ADB seeks to promote power sector reforms in a greater number of states than would otherwise be possible by direct lending. Such an approach will broaden ADB's association with state-level power utilities and will complement the Government's own efforts at power sector reforms through mechanisms such as the Accelerated Power Development and Reform Program. The proposed loan will also mobilize additional resources in terms of counterpart funds, as ADB lending will be limited to 60% of the subproject costs.

4. External Assistance to the Power Sector

19. The power sector has received a major portion of India's external assistance. For example, of ADB's total government-guaranteed lending to India, amounting to \$10.317 billion as of 30 June 2002, 11 loans for \$2.215 billion (21.5%) were approved for the power sector. The first four projects were for power generation, three were sector loans to support improvements in SEB efficiency and development of the national transmission grid, while the two most recent were for sector development to support the restructuring of a state's power sector. In addition, under its private sector operations, ADB has approved three loans and investments totaling \$79.8 million for one captive transmission and two generation projects. Power subprojects have also been considered for financing under ADB's private sector infrastructure facility and the Infrastructure Development Finance Company. ADB has also approved \$12.9 million for 21 technical assistance grants, mainly advisory, at both the national and state levels. Previous ADB assistance to India's power sector is listed in Supplementary Appendix A.

20. The major funding source to the sector has been the World Bank, which has supported power generation, transmission, and distribution projects, including assistance directed to SEBs. It is now supporting power sector reforms in the states of Andhra Pradesh, Haryana, Orissa, Rajasthan, and Uttar Pradesh. In Andhra Pradesh and Uttar Pradesh, power sector reform is viewed as part of overall reform of state finances. ADB coordinates with the World Bank on the geographic demarcation of state-level operations, as well as to ensure overall complementarity of actions at both the central and state levels. Other major agencies funding the sector are the Japan Bank for International Cooperation, Kreditanstalt für Wiederaufbau of Germany, Department for International Development of the United Kingdom (DFID), Canadian International Development Agency (CIDA), and United States Agency for International Development. Although the combined assistance of all aid agencies constitutes only about 8–10% of the total investments in the sector, several key policy initiatives have been catalyzed as a result.

¹⁰ This support started with Loan 1506-IND: *Gujarat Public Sector Resource Management Program* and Loan 1717-IND: *Madhya Pradesh Public Resource Management Program*, each for \$250 million, approved on 18 December 1996 and 14 December 1999, respectively. They were followed by Loans 1803/1804-IND: *Gujarat Power Sector Development* and Loans 1868/1869-IND: *Madhya Pradesh Power Sector Development Program*, each for \$350 million, approved on 13 December 2000 and 6 December 2001, respectively.

21. The Japan Bank for International Cooperation has been supporting the expansion of public sector generation, transmission, and distribution, including rural electrification. DFID's exclusive objective in providing assistance is poverty reduction. It has financed studies for power sector restructuring in Andhra Pradesh, Haryana, and Orissa. The United States Agency for International Development has extensively supported and continues to support policy aspects of private sector participation. It has supported studies for state sector reforms through PFC by providing grant assistance for energy management, conservation, and training. CIDA assisted Kerala in conducting extensive studies for restructuring its power sector. ADB is following up on CIDA's work through policy dialogue and preparation for a possible loan intervention. Together with the World Bank, CIDA is providing similar TA for power sector reforms in Andhra Pradesh. In Madhya Pradesh, CIDA and ADB are cooperating and coordinating closely in providing assistance for power sector reform. Some of the major projects financed by other aid agencies are also listed in Supplementary Appendix A.

III. THE PROPOSED PROJECT

A. Objectives

22. The overall objective of the ADB assistance is to help improve the state power sector of India so that it becomes financially self-sustaining and capable of adequately providing its share of services to the country's economic and social development. The immediate objectives are to (i) promote power sector reforms in a few selected states, (ii) help establish independent regulatory bodies, and (iii) functionally unbundle the sector entities so that they become commercially and operationally autonomous and efficient, and financially viable. To promote the achievement of these objectives, ADB will provide financial assistance, channeled through PFC, to the selected SEBs to meet part of their financing requirements for reducing system losses, enhancing operational flexibility and efficiency, and improving the delivery of services to the consumers.

B. Components and Outputs

1. Subborrowers

23. Subborrowers will be selected from among SEBs¹¹ based on written commitments by the concerned state governments and SEBs to undertake power sector reforms. The main criterion for eligibility will be the availability of a reform-oriented operational and financial action plan (R-OFAP) acceptable to PFC. The R-OFAPs may include a series of time-bound reform steps to be carried out in phases (para. 31). Each R-OFAP will be tailor-made to suit the state/SEB concerned, taking into account the degree of reforms already undertaken by the state and other prevailing conditions in the power sector of the state. Following the adoption of an R-OFAP, PFC will review the investment requirements of the concerned SEB and will develop an assistance plan linking specific reform steps to maximum borrowing limits for the SEB at various phases of the reform process. PFC will then submit the finalized R-OFAP and the assistance plan to ADB prior to starting lending to the SEB under ADB's line of credit. The R-OFAPs will be finalized in consultation with ADB. Any subsequent modifications or amendments will be notified to ADB.

24. SEBs in the following states have been proposed as eligible subborrowers initially: West Bengal, Maharashtra, Assam, Tamil Nadu, Punjab, and Karnataka. PFC will have the option of selecting more SEBs during loan administration, in consultation with ADB, should the

¹¹ The term SEB is used to denote state electricity boards as well as other public power utilities established as a result of sector restructuring.

subprojects already identified appear to be inadequate to cover the total loan amount, for any reason. The main criterion for selecting further states/SEBs will remain the same: the availability of an agreed R-OFAP. Those SEBs that are already receiving assistance from ADB or the World Bank will not be entitled to the line of credit from PFC under the loan except as otherwise agreed with ADB.

25. To be selected, the SEBs will be required to show that they can achieve (i) at least a 3% ROR on net fixed assets in service; and (ii) a debt service coverage ratio (DSCR) of at least 1.2 times, both within such period from the date of the first subloan as indicated in the respective R-OFAP. For this purpose, PFC will arrange to review financial projections for the candidate SEBs during selection to ensure that the above requirements can be met. In order to ensure commitment and ownership of the subborrower to the subprojects, the SEBs will also be required to (i) commit to contribute counterpart funds not less than 40% of the cost of the subproject; and (ii) indicate satisfactory performance under the ongoing subloans, including meeting targets under the R-OFAPs. The subproject appraisal reports, to be prepared for each subproject by PFC, will assess whether they meet these criteria.

2. Subprojects

26. While the shortage of power generating capacity has been a chronic problem in India, inefficient operation of existing facilities is a more urgent issue that needs to be addressed to improve sector performance in the short to medium term. The loan will therefore be targeted mainly at those projects that will improve system operations and reduce system losses, such as rehabilitation of power transmission and distribution facilities. Financing will also be available for improving access to electricity by extending transmission and distribution networks. R&M of existing generating facilities that are required to achieve compliance with environmental regulations and improve efficiency will also be considered. The subborrowers will have to demonstrate that following the R&M works, generating facilities will meet applicable environmental requirements of the pollution control boards of the relevant state and other statutory bodies concerned. PFC will select subprojects categorized as resettlement B or C only. New generation projects or projects for extension of generation projects will not be selected for subloans.

27. Based on the above, the following categories of subprojects will be considered for financing under the loan: (i) transmission and distribution rehabilitation, (ii) transmission and distribution facilities required for system expansion and reinforcement, and (iii) renovation and modernization of existing generating plants that are required for achieving compliance with environmental regulations and efficiency improvement.

28. Subprojects will be selected on the basis of (i) being part of the least-cost option for meeting the project objectives; (ii) environmental and social acceptability—conforming to relevant ADB guidelines and having obtained relevant statutory clearances; (iii) economic viability—the economic internal rate of return (EIRR) being greater than 12%; and (iv) financial viability—the financial internal rate of return (FIRR) being greater than the weighted average cost of capital. The subproject appraisal reports, to be prepared for each subproject by PFC, will assess whether they meet these criteria.

29. PFC's Projects Division has so far identified 22 projects in West Bengal, 16 projects in Maharashtra, 14 projects in Assam, and 3 projects in Tamil Nadu consisting of transmission, distribution, and R&M of existing power stations. The total cost of these identified projects is estimated at \$392.7 million, consisting of \$235.6 million in foreign exchange costs and \$157.1 million in local currency costs. A summary of costs is given in Table 2 and the details are presented in Appendix 3.

Table 2: Estimated Cost of Identified Projects
(\$ million)

State	Total Cost	Foreign Cost	Local Cost
West Bengal	65.9	39.5	26.4
Assam	18.2	10.9	7.3
Maharashtra	266.7	160.0	106.7
Tamil Nadu	41.9	25.2	16.7
Total	392.7	235.6	157.1

Source: Power Finance Corporation

C. Special Features

30. Operational and financial action plans (OFAPs) are a mechanism devised in the early 1990s to monitor the performance of SEBs borrowing from PFC. Formulated by PFC in consultations with ADB and the World Bank during the processing of the previous loans to PFC, OFAPs were based on the results of initial diagnostic studies of the operational and financial situation of individual SEBs. The resulting OFAPs focused on technical and financial remedial actions to improve SEB performance, together with detailed actions for accomplishing such improvements in a time-bound manner by action centers specifically identified. Key elements included improving power plant performance; reducing system losses; adjusting tariffs; improving billing and collections; and developing and streamlining financial, accounting, and management information systems. PFC's approval of a loan to an SEB was subject to the formal agreement of an OFAP. PFC then monitored the implementation of the OFAP as part of its loan administration activities. Although OFAPs were successful in bringing about operational improvements in SEB performance, there were some inherent weaknesses in the OFAP mechanism as applied initially. First, the action plans proposed within the OFAPs were constrained by the structural framework within which the power sector operated. Without structural reforms, remedial actions could not be implemented in a sustainable manner, partly due to political constraints. For example, in the absence of independent regulatory bodies, the tariff adjustments that were needed to reach agreed financial performance could not be implemented in an equitable manner, mainly due to political interference. Second, the OFAPs contained too many performance targets and the modest levels of investments and technical assistance could not adequately support them. Furthermore, OFAPs required much time and effort to monitor and enforce, and affected the smooth implementation of the supported projects.

31. Based on the lessons learned, the OFAP mechanism has been improved. Instead of attempting to achieve improved performance within the existing structural framework, the framework itself will be restructured to facilitate remedial actions. The restructuring may include unbundling SEB operations along functional lines, setting up independent regulatory bodies to oversee sector operations and set tariffs, and introducing commercially oriented operational techniques into distribution operations with performance targets. These actions are incorporated into an R-OFAP. It is an action plan developed jointly by PFC, the SEB concerned, and its state government, and agreed to by the three parties involved. A typical R-OFAP will consist of three or four phases. Each phase will contain a set of reform tasks to be accomplished within an agreed time frame. The reforms will include (i) adopting reform measures by the state government, including a reform bill if considered necessary; (ii) establishing and operationalizing an independent SERC; and (iii) establishing a high-level state government committee to oversee the reform process and a working-level group to coordinate the reform actions; (iv) formulating and filing proposals for tariff rationalization to obtain the SERC's rulings on the proposals; (v) implementing the SERC's tariff rulings in a time-bound manner; (vi) adopting and continuing the implementation of a policy on metering, with the eventual goal of 100% consumer metering; and (vii) adopting enhanced measures by the state government to discourage

electricity theft by imposing penalties and other measures. A summary of a typical R-OFAP is given in Appendix 4.

D. Financing Plan

1. Terms and Conditions of the Loan

32. PFC has requested a loan of \$150 million from ADB's ordinary capital resources to help finance the Project. The loan will have a 20-year term including a grace period of 5 years, with repayments linked to actual disbursements under the Loan, an interest rate determined in accordance with ADB's LIBOR-based lending facility, a commitment charge of 0.75% per annum, a front-end fee of 1.0%, and such other terms and conditions set forth in the draft Loan Agreement. PFC has provided ADB with (i) the reasons for its decision to borrow under ADB's LIBOR-based lending facility on the basis of these terms and conditions and (ii) an undertaking that these choices were its own independent decision and not made in reliance on any communication or advice from ADB.

2. Relending Terms and Arrangements

33. PFC will relend the proceeds of the ADB loan to eligible subborrowers for subprojects that ADB has agreed to. Subborrowers eligible to receive ADB funds will be only those meeting the requirements set out in paras. 23 and 25. The subloans will have a maximum maturity of 15 years, including a grace period not exceeding 5 years and a relending rate determined in accordance with PFC's Operational Policy Statement (OPS) (Supplementary Appendix B). The ADB loan will be used only to finance a part or the whole of the direct and estimated indirect foreign exchange components of subprojects and will be limited to 60% of the total subproject cost. In all other respects, PFC will relend ADB funds in accordance with its OPS and individual R-OFAPs agreed with the eligible subborrowers.¹² The funds accumulated from shorter relending maturity and grace periods may be used to finance other eligible subprojects.

34. In order to achieve the maximum possible reform impacts without spreading ADB resources too thin, it was agreed that the maximum lending limit for any single subborrower would be 40% of the total ADB loan except where a higher limit is warranted due to special circumstances. PFC will obtain ADB's prior approval for such increases.

E. Implementation Arrangements

1. Project Management

a. Executing Agency

35. PFC will be the Executing Agency for the proposed loan. Its chairperson and managing director will be responsible for the overall management of the Project. Day-to-day implementation of the Project will be carried out by the relevant divisions under guidance from their respective directors as follows. Formulation and finalization of R-OFAPs, determination of maximum lending limits for R-OFAP milestones, and monitoring of their compliance will be the responsibility of the Institutional Appraisal and Development Division; appraisal and approval of subprojects and monitoring of their implementation, including procurement activities, will be the responsibility of the Projects Division. The Externally Aided Projects Unit (EAPU) will be

¹² As per the OPS, the structure of interest rates to be charged by PFC would be as attractive as possible without endangering its own operations or overall objectives. The structure would, in general, be dependent on the cost of raising resources and the state of the financial markets. In certain areas, assistance may be provided on softer terms wherever promotional and development requirements so demand. The interest rate structure would be reviewed from time to time.

responsible for assessing the environmental and social feasibility of subprojects and monitoring the implementation of environmental and social impact mitigation measures. EAPU, through its Environmental Assessment and Monitoring Cell, will also be responsible for monitoring resettlement preparation and implementation. The Head, EAPU will be responsible for overall coordination and execution of the Project, and for liaising between PFC and ADB. A description of PFC, its operations, and its financial performance are given in Appendix 5. PFC's organization chart is in Appendix 6.

36. PFC's operational philosophy and procedures are guided by its OPS. Developed in 1990 in close consultation with ADB and the World Bank, and since then revised to reflect recent changes in the India power sector, the OPS provides a comprehensive set of guidelines for power sector lending. It defines PFC's mission and objectives and sets out guidelines for project identification, eligibility, lending modalities, exposure limits, guarantees and security, and project administration including procurement procedures. It also specifies limits for key financial parameters, such as return on equity and DSCR, to ensure PFC's own financial health while lending to others. The key features of the revised OPS are (i) emphasis on power sector reforms in addition to project-based lending; (ii) provision of other services such as consulting and advisory services, foreign exchange management, and lender's engineering services; and (iii) assistance to private sector projects. A summary of the OPS is in Supplementary Appendix B.

37. Over the past 5 years, from FY1998 to FY2002, PFC's financial performance has been on a sound level. PFC has exceeded all the financial performance targets¹³ agreed with the Ministry of Power every year for this period. Both the return on assets and the return on equity in FY2002 indicate adequate profitability of 5.0% and 20.4%, respectively. The DSCRs are also higher than the minimum 1.2 times. PFC's capital position, as measured by its risk-weighted capital adequacy ratio (CAR),¹⁴ was 25.6% in FY2002, which is superior by international standards.¹⁵ The financial position of PFC has stabilized for a combination of reasons. First, PFC continuously expanded its loan size to support the growing investment needs of India's power sector. Second, nonperforming loans amounting to about Rs7.5 billion were restructured between FY1997 and FY2000 and as a result, PFC was able to improve cash generation. Consequently, PFC has maintained high overdue recovery rates of 97–100% since FY1998. Third, funding cost has been relatively low due to PFC's access to tax-free bonds, tax exemption on loans to infrastructure projects, and external borrowing with government guarantees. A summary of PFC's actual financial performance is given in Table 3 and details are in Appendix 7.

¹³ At the end of every financial year, PFC and the Ministry of Power prepare a memorandum of understanding (MOU) agreement to set financial targets, e.g., sanctions, disbursements, collection, return on assets, return on equity, operating ratio.

¹⁴ The capital adequacy ratio (CAR) is the ratio of total qualified capital (equity [Tier I] plus mezzanine capital [Tier II, III]) to total risk-weighted assets including off-balance sheet items. The Reserve Bank of India (RBI) regulates the requirements and standards based on types of financial institutions. However, PFC has been exempted from the requirements. Accordingly, the calculation of CAR is based on RBI norms for nonbanking financial companies. When CAR was calculated on the two standard norms, RBI and BIS, the difference between the two values was less than 0.5% for 2001.

¹⁵ The Basel Accord of the Bank for International Settlements (BIS) recommends a mandatory CAR of 8% for banks in Organisation for Economic Co-operation and Development (OECD) countries. For most developing member countries (DMCs), the guidelines recommend a minimum CAR of 12%.

Table 3. Power Finance Corporation Audited Actual Financial Performance Indicators, FY1998–2002

Financial Indicators	FY1998	FY1999	FY2000	FY2001	FY2002
Return on Equity ^a (Pretax, %)	25.8	26.7	26.8	22.8	25.3
Return on Equity ^a (Post-tax, %)	25.5	21.9	21.4	17.9	20.4
Return on Assets (Pretax, %)	7.4	7.5	7.1	5.8	6.1
Return on Assets (Post-tax, %)	7.3	6.1	5.7	4.5	5.0
Debt Service Coverage Ratio	2.4	1.1	2.8	1.4	1.2
Capital Adequacy Ratio (%)	31.0	29.1	27.1	26.9	25.6
Due Collection Rate (%)	97.6	98.5	98.7	99.5	97.1
NPAs on Gross Loans: RBI ^b Norms (%)	10.7	2.8	6.0	3.4	4.4
NPAs on Gross Loans: BIS ^c Norms (%)	10.7	2.8	6.0	3.4	4.4

NPA = nonperforming asset.

^a Opening value, excluding reserves for bad and doubtful debts

^b Reserve Bank of India prudential norms.

^c Bank for International Settlements recommended norms.

Source: PFC and staff findings.

38. For the next 10 years, PFC is targeting 20% average disbursement growth based annually on the 10th and 11th five-year plans. PFC's profitability is likely to remain acceptable over the near term due to the strong demand for funds from the state power sector as well as from the central power utilities. Although aggressive expansion of the loan portfolio will result in a gradual decline of its capital position and profitability of its assets, PFC is still expected to demonstrate sound financial performance. However, it should be noted that PFC's financial position will depend on its internal risk control. First, PFC will be exposed to more market risks by increased market borrowing and foreign currency funding, and by decreased government support,¹⁶ such as tax-free bonds, equity contributions, and regulatory exemptions. Second, in the event that interest yields are lower due to a competitive financial market in the near term, PFC's other revenue sources besides the intermediary service are likely to be limited.¹⁷ Furthermore, PFC's profitability might be eroded by the deterioration in the quality of the SEB loan portfolio. Therefore, over the long term, PFC will be required to conduct timely risk control and thorough asset-liability management justified by an increase in the stable funding base at acceptable costs as well as by profit opportunities. A summary of PFC's projected financial performance is given in Table 4 and details are in Appendix 7. Assumptions made in preparing the financial projections are in Supplementary Appendix C.

¹⁶ Government support, in the form of direct loans or tax-free bonds, has substantially declined over the years [(e.g., 58% (FY1999) to 15% (FY2002)]. Particularly, the Government has made no direct loans since FY2001. There are no other explicit subsidies involved in PFC's lending operations.

¹⁷ Besides its core lending business, PFC has been starting fee-based services, such as engineering consultancy services.

**Table 4. Power Finance Corporation Projected Financial Performance Indicators,
FY2003–2009**

Financial Indicators	Covenanted Targets	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009
Return on Equity (Pretax, %)	15.0	26.5	26.8	25.2	24.6	23.4	23.6	24.9
Return on Equity (Post-tax, %)	-	21.2	21.5	20.2	19.7	18.7	18.9	19.9
Return on Assets (Pretax, %)	-	6.1	6.1	5.4	4.8	4.4	4.2	4.2
Return on Assets (Post-tax, %)	-	4.9	4.9	4.3	3.9	3.5	3.4	3.4
Debt Service Coverage Ratio	1.2	1.6	2.3	2.0	2.3	2.1	1.4	1.8
Capital Adequacy Ratio (%)	12.0	24.8	25.0	22.6	21.2	20.1	19.1	18.4

Source: PFC and staff estimates.

39. PFC's accounting records have been properly maintained. They are reviewed by qualified statutory external auditors¹⁸ appointed by the Government. PFC also has an internal audit system that appears to be broadly commensurate with the size and nature of its business.

b. Subproject Selection and Appraisal

40. Subprojects will be selected from the eligible categories of projects listed in para. 27, based on detailed project reports submitted by the subborrowers. Subproject appraisal reports will then be prepared by PFC, according to the format outlined in PFC's *Outline and Guiding Principles for Project-Loan Appraisal Reports*. Approval procedures will follow PFC's standard practices for project appraisal and approval. Approval of a subproject will be subject to (i) meeting the economic, financial, and environmental and social acceptance criteria as set out in para. 28; and (ii) not exceeding the borrowing limit assigned to the subborrower at that stage of the reform process.

41. The borrowing limit of a subborrower at any given stage will be governed by the R-OFAP mechanism. Each major milestone in the R-OFAP will be linked to a maximum borrowing limit for that milestone as indicated in para. 23. Subprojects will be approved within this applicable borrowing limit of the subborrower at any given time. In order to raise the limit, the subborrower/state government will have to satisfactorily complete the reform tasks specified for the next phase. If a particular phase of the R-OFAP is not completed within the time frame agreed upon, PFC may, with ADB's concurrence, divert loan funds to a better performing subborrower. The maximum borrowing limit, the corresponding R-OFAP milestone, and the time frame for achieving that will be determined at the stage of selecting the subborrower as outlined in para. 23. A flowchart indicating the detailed subproject approval procedure is in Appendix 8.

c. Subproject Approval

42. The first subproject for each SEB will be submitted to ADB for review prior to approval by PFC to ensure that ADB's guidelines on procurement, environmental and social assessment, and economic and financial analyses, as well as the terms and conditions of the ADB loan are followed. Thereafter, only subprojects exceeding \$10 million in ADB financing will require prior review by ADB. However, irrespective of this limit, prior review by ADB will be required for financing any subproject that either involves significant environmental impacts or resettlement.

¹⁸ The recent minor qualifications by auditors in FY2002 have been resolved. The qualifications were (i) understatement of Rs1.5 crore profit, consequent to the change in accounting policy in respect of provision for leave encashment and (ii) an excess future claim from the Government with respect to the interest subsidy fund account.

2. Implementation Period

43. The Project will be implemented over a period of 5 years, commencing in January 2003. The commitment period during which PFC will continue to approve subprojects will be limited to the first 4 years. Disbursements for the approved subprojects will continue until the end of the fifth year. A project implementation schedule is given in Appendix 9.

3. Procurement

44. Procurement of goods and services financed under the ADB loan will follow provisions applicable to development finance institutions in ADB's *Guidelines for Procurement*. For contracts valued at \$5 million or more, subborrowers will follow international competitive bidding procedures. For contracts below \$5 million, PFC will ensure that competitive and transparent procedures will be followed by the subborrowers in prequalifying bidders, evaluating bids, and awarding contracts, with due consideration of economy and efficiency. Procurement will be from ADB member countries only.

45. ADB management has approved advanced procurement action. PFC and the subborrowers have been permitted to initiate procurement procedures for eligible subprojects, such as preparation of draft bidding documents and submission of the documents for review and approval by ADB after loan appraisal.

4. Disbursement Arrangements

46. The proposed loan will be disbursed to finance eligible subprojects in accordance with ADB's *Loan Disbursement Handbook*, January 2001, as amended from time to time. For ease of loan disbursements, the Borrower may set up an imprest account with a local commercial bank acceptable to ADB. The imprest account will be established, managed, replenished, and liquidated in accordance with ADB's *Loan Disbursement Handbook*. The imprest account will have a ceiling of 6 months projection and not more than 10% of the loan.

47. PFC has opted for repayments linked to disbursements under the Loan in accordance with the Policy on Review of ADB's Financial Loan Products.¹⁹ Accordingly the Loan will comprise of a series of amortization schedules based on aggregate disbursements under the Loan, for each semestral period with a term of 20 years including a grace period of 5 years schedule.²⁰ The final maturity date under the Loan is fixed at 15 October 2028 applicable to the disbursements made during the last semester of the loan closing date at 30 June 2008.

5. Accounting, Auditing, and Reporting

48. PFC will require subborrowers to maintain separate subloan accounts and records in a manner that facilitates assessment of the performance of each of its subprojects. PFC will submit to ADB these subloan accounts when required by ADB. PFC will also submit to ADB unaudited financial statements of subborrowers within 9 months of the close of the financial year, and audited financial statements within 12 months of the close of the financial year.

49. PFC will submit to ADB, within 9 months of the close of the financial year, audited financial statements of PFC consisting of an income statement, balance sheet, and cash flow statement (audited by an auditor acceptable to ADB), financial projections, and portfolio reports showing asset quality and capital adequacy in the form and complying with criteria requested by ADB, and within 6 months of the close of the financial year, unaudited financial statements of

¹⁹ R79-01, Revision 1, Final dated 19 June 2001.

²⁰ R79-01, Revision 1, Final dated 19 June 2001, paragraphs 42-26.

PFC. Before 31 December of each year, PFC will review its ability and meet its financial obligations and take necessary steps to meet with such requirements under the Loan. A consolidated progress report will be prepared for each subborrower and its subprojects and submitted to ADB on a 6-monthly basis. The report will cover (i) compliance with R-OFAPs, (ii) appraisal of subprojects, (iii) implementation of subprojects, (iv) subproject compliance with ADB's social and environmental guidelines, (v) progress on commitment and disbursement of funds, and (vi) such other information as may be reasonably required for ADB to monitor the use of loan proceeds. A project completion report, covering all major aspects of loan utilization and subproject implementation, will be submitted within 6 months of the closing of the loan accounts of each subborrower and within six months of closing of the Loan.

6. Project Performance Monitoring and Evaluation

50. PFC, with the assistance of the subborrowers, will carry out project performance monitoring and evaluation and benefit monitoring and evaluation through periodic reviews of the subprojects in accordance with ADB's *Project Performance Management Systems Handbook*. For this purpose, PFC will compile and analyze socioeconomic and other appropriate data such as the number of beneficiaries, tariff levels, and institutional improvements of the borrowing entities as well as of the subprojects concerned. The appraisal report for each subproject and the initial social assessment reports for each state will provide the baseline data, which will be updated through the periodic reviews. The findings of these reviews and supporting data will be incorporated into a project completion report for each state.

7. Project Review

51. ADB will conduct regular reviews throughout project implementation. In particular, a midterm review covering the entire scope of the Project will be conducted during mid 2005 to determine whether any adjustments to the implementation of the R-OFAP mechanism, procurement procedures, and project management arrangements are required.

52. PFC, on its part, will also carry out regular project reviews of its subborrowers. These reviews will cover procurement, availability of counterpart funds, project implementation progress, and implementation of the R-OFAP for each subborrower. The findings of these reviews will be consolidated into a semiannual progress report for each subborrower and will be submitted to ADB.

IV. PROJECT BENEFITS, IMPACTS, AND RISKS

A. Project Benefits

53. The financial health of many of the SEBs has been deteriorating due to insufficient cost recovery. Inadequate tariffs and high operating costs have squeezed their profit margins. Furthermore, low collection of receivables, high T&D losses, and unpaid state government subsidies (to compensate for free power supply to agricultural or domestic customers) have accelerated SEBs' financial difficulties. The Planning Commission of India estimates the SEBs' losses at Rs248 billion (\$5.174 billion) and uncovered subsidy outstanding at Rs290 billion (\$6.037 billion) for FY2002. Consequently, most of the SEBs are now being restructured under various initiatives in order to achieve financial viability and improve operational efficiency. The proposed loan will be utilized to support the reform-minded states and their SEBs. First, the loan conditions require recipient states to undertake reforms including tariff rationalization through SERCs, which will help generate financial profits. Second, as the subloans focus on system improvement through rehabilitation, modernization, and upgrading of transmission, distribution, and generation infrastructure, as well as on metering, the subprojects will contribute to financial

recovery through increased efficiency, lower T&D losses, and better metering and collections. All these improvements are expected to improve the financial condition of the assisted agencies and minimize financial risks.

54. The indirect benefits attributable to the proposed loan are substantial. For example, tariff rationalization by independent regulatory bodies will result in more equitable tariff levels across consumer categories, leading to efficient allocation of financial and economic resources. Improvements in the quality of power supply will enhance agricultural production and will discourage the use of inefficient captive power generation by agricultural and certain industrial consumers. Improvement of the financial position of utilities will reduce the burden on state government budgets for subsidies and will enable them to allocate more budgetary resources to other needy sectors of the economy such as education, health, and rural infrastructure. Finally, the independent tariff decisions by the SERC and a stable power supply through system improvements will encourage more private sector participation both in the power sector and in other parts of the economy.

B. Project Impacts

1. Social

55. PFC's precondition for selecting eligible SEBs is the availability of an R-OFAP (Appendix 4) that outlines the reform steps and social aspects of reforms. For example, the R-OFAP prepared for the West Bengal State Electricity Board describes the functions of the SEB; requirements for electrification in rural and urban areas as well as for different consumer categories; unbundling of SEB operations; SEB financial management; rationalization of tariffs; services to poor and vulnerable groups and to agricultural consumers; and management of tariff subsidies. Recommendations regarding proposed reforms are under the management of a high-level steering committee. R-OFAP recognizes the need to provide services at affordable prices to the poor and to disadvantaged groups. R-OFAP also identifies the need to address this issue and the state government's responsibility to reimburse the SEB for any subsidies. The West Bengal State Electricity Board has set up a task force to address the impacts of reform, including human resources impacts of reorganizing the power sector. Similar approaches will be undertaken by each state government and their respective SEBs. A summary poverty reduction and social strategy form is attached as Appendix 10.

56. ADB has agreed with PFC on procedures to screen and classify subprojects. To facilitate the screening process, screening forms and a flow-chart for triggering actions by PFC were developed by ADB staff. PFC's newly established EAPU will be responsible for managing social issues, including resettlement. Additional staff have been assigned to EAPU to ensure that adequate human resources are available. PFC and SEB staff participated in a training program on environment and resettlement administered by ADB staff. PFC staff will receive further training on resettlement through the India Resident Mission's training program, specifically designed for development finance institutions. PFC confirmed that only subprojects with insignificant resettlement will be financed; subprojects therefore fall within categories B and C only. Any subproject in category A that may be considered for financing will not be included without prior consent from ADB. A resettlement framework is attached in Appendix 11. Loan covenants will be included to ensure that short resettlement plans are forwarded to ADB prior to the award of civil works contracts. PFC will monitor resettlement but ADB will reserve the right to monitor subprojects.

2. Environmental

57. The types of subprojects to be financed under the proposed loan vary from rehabilitation of transmission and distribution facilities, expansion of transmission and distribution systems, to

renovation and modernization of existing generating plants. Under ADB's *Environmental Assessment Requirements*, the subprojects could fall under environment category B or C. It has therefore been agreed between ADB and PFC that an initial environmental examination (IEE) report be prepared for each subproject that is categorized as a "B" project, in accordance with the *Environmental Assessment Requirements*. In addition, each R&M subproject will need an IEE report. An environmental review procedure was developed by ADB staff and agreed with PFC to be implemented. The procedure includes screening and approval of subprojects and is presented in Appendix 12.

58. A summary IEE of a typical subproject representing a transmission and distribution project is given in Appendix 13. The summary IEE shows that the environmental impacts will be minimal and temporary. These impacts are mostly related to land clearing activities and transport of construction equipment to the subproject area. The proposed mitigation measures identified by the IEE are manageable and are mostly related to the contractor's obligations. The mitigation measures under the proposed management plan will be covenanted by PFC in its loan agreement with the concerned subborrower. Although the environmental impacts of subprojects will be minimal, regular monitoring to ensure proper implementation of environmental management plans will be carried out by PFC, particularly for subprojects where polychlorinated biphenyl (PCB) has been used in the past.

C. Project Risks

59. The main risk is the financial viability of the SEBs and hence of PFC. PFC's asset quality is vulnerable to the poor creditworthiness of its SEB clients. PFC has attempted to mitigate this credit risk by securing its loans through escrow account arrangements and state government guarantees. Escrow account arrangements cover 1.25 times the present and future debt service of SEBs owing money to PFC. PFC assesses escrowable capacity of an SEB based on the future cash flow in the "with reform" scenario. Therefore, loans to an SEB could be under-collateralized if reforms do not produce the incremental cash flow as projected. This risk is expected to be mitigated by state government guarantees. In addition, to avoid this risk, PFC needs to select subborrowers based strictly on the proposed R-OFAP mechanism and to ensure timely risk control management. The Asset-Liability Management Committee that was established within PFC in December 2001 is expected to ensure such risk control management, including appropriate resource mobilization to bridge the liquidity gap, currency exchanges, currency variations, and market fluctuations, thereby ensuring stable funding and profitability.²¹ In addition, PFC will need to monitor and control loan portfolio quality, its proper provisioning, and the resulting capital adequacy in a recurrent manner. These efforts will minimize the risks associated with PFC as a borrower.

V. ASSURANCES

60. In addition to the standard assurances, the Government and PFC have given the following assurances, which have been incorporated in the legal documents.

A. General

- (i) PFC will carry out its operations in accordance with the OPS adopted by its board of directors.

²¹ To meet liabilities due to currency depreciation, PFC has maintained a separate trust fund, the Exchange Risk Administration Fund, since 1994. In 2001, PFC also started hedging interest rate and exchange risks through swaps.

- (ii) PFC will not lend the proceeds of the ADB loan to any subborrower without a finalized R-OFAP or other eligibility criteria satisfactory to PFC.
- (iii) PFC will not preallocate ADB funds among borrowers or states but will lend strictly in accordance with eligibility and exposure criteria set out in its OPS and lending limits established using the R-OFAP mechanism.
- (iv) For financing under the ADB loan, except as otherwise agreed with ADB, PFC will not select subprojects (a) from subborrowers already receiving assistance from ADB or the World Bank or (b) that involve new generation projects or extension of existing generation projects.
- (v) PFC will ensure that EAPU is fully functional and adequately staffed throughout the implementation of the Project.

B. Financial

- (i) PFC will maintain a DSCR of not less than 1.2 and a capital adequacy ratio based on new prudential norms, of not less than 12%.
- (ii) Except as otherwise agreed by ADB, PFC will maintain (a) a net profit before tax to beginning value of its equity (where equity includes reserves and retained earnings) of not less than 15% and (b) liquid investments/lines of credit adequate to meet projected disbursements.
- (iii) PFC will adopt the formulated new prudential norms (including asset classification, provisioning, capital adequacy, risk assessments, and asset-liability management) within the time frame as agreed with the Government as soon as available and not later than March 2003.

C. Resettlement

- (i) PFC will ensure through the subloan agreements that (a) the subprojects are implemented in accordance with the ADB's policy on involuntary resettlement and where applicable ADB's *Policy on Indigenous Peoples*, (b) the resettlement framework will form the basis for preparing resettlement plans for each subproject that has land acquisition and/or resettlement impacts, and (c) all efforts are made to avoid or minimize land acquisition and resettlement impacts.
- (ii) Prior to selecting a subborrower, PFC will prepare a social impact assessment for the respective eligible state to assess social impacts of reforms and the subprojects financed under the loan.
- (iii) PFC will only select subprojects that are classified as B or C in accordance with the resettlement framework. For subprojects that involve land acquisition or resettlement, the initial screening checklist for involuntary resettlement and the initial social and poverty screening form will be submitted.
- (iv) PFC will ensure that (a) civil works contracts will not be awarded until a resettlement plan as agreed between ADB, PFC, and the subborrower has been approved; and (b) works will not commence until after the subborrower acquires the land and rights to the land, free from any

encumbrances. A compliance memorandum indicating compliance with ADB's Policy on Involuntary Resettlement, signed by the Head, EAPU will be forwarded to ADB along with the resettlement plan. PFC will also submit 6-monthly monitoring reports to ADB with regard to land acquisition and resettlement under the subprojects.

- (v) PFC will not select subprojects (a) where litigation is ongoing or where compensation payments are outstanding; or (b) that are category A in accordance with ADB's policy on involuntary resettlement or projects that affect more than 100 individuals belonging to indigenous peoples/scheduled tribes.
- (vi) PFC will designate one staff member within EAPU to be responsible for handling resettlement-related issues, including preparation of resettlement plans and monitoring and evaluation of resettlement implementation.
- (vii) PFC will ensure that subprojects that require resettlement plans will be prepared and implemented in consultation with affected persons and that resettlements plans are disclosed to the public. The mechanisms for disclosure will be discussed in the resettlement plan. PFC will be guided by ADB's *Handbook on Poverty and Social Assessment* and *Handbook on Resettlement: A Guide to Good Practice*.

D. Environment

- (i) PFC will ensure through subloan agreements that all subprojects (a) comply with ADB's *Environmental Assessment Requirements* and the IEE and (b) are implemented in accordance with ADB's *Environmental Guidelines for Selected Infrastructure Projects*.
- (ii) PFC will be responsible for reviewing the IEE of all subprojects with an investment cost of less than \$10 million and for formulating the relevant covenants for the same under the subloan agreements.
- (iii) PFC will forward to ADB for approval, IEE reports for all subprojects (a) that have significant impacts or (b) that have a capital cost of more than \$10 million. PFC will include in the subloan agreements required environmental covenants as recommended by ADB for these subprojects.
- (iv) PFC will not select subprojects that (a) are environment category A and sensitive category B, as per ADB's *Environmental Assessment Requirements* or (b) involve capacity expansion of coal-based power plants except where appropriate clean technology and pollution control measures are adopted by the SEB.
- (v) PFC will undertake an environmental monitoring program to ensure that each of its borrowers implements all mitigation measures as stated in the relevant IEE report.
- (vi) PFC will ensure that environmental aspects of all subprojects are properly documented and made available to the public if requested.

VI. RECOMMENDATION

61. I am satisfied that the proposed loan would comply with the Articles of Agreement of ADB and recommend that the Board approve the loan of \$150,000,000 to the Power Finance Corporation Limited, India to be guaranteed by India, for the State Power Sector Reform Project from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's LIBOR-based lending facility; a term of 20 years, including a grace period of 5 years, with repayments linked to actual disbursements under the Loan, and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan and Guarantee Agreements presented to the Board.

TADA0 CHINO
President

19 November 2002

PROJECT FRAMEWORK

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
<p>Goal To improve power sector operations at the state level.</p>	<p>Financially viable state-level power utilities, achieving a minimum of 3% return on net fixed assets as mandated by law.</p>	<ul style="list-style-type: none"> • Annual reports of power utilities • Annual Report of the Planning Commission on the working of state electricity boards. 	
<p>Purpose Support the establishment of a commercially oriented, financially viable, and efficient power sector.</p>	<ul style="list-style-type: none"> • Sector restructured • Independent and transparent sector regulation • Depoliticized tariff setting 	<ul style="list-style-type: none"> • Reform-oriented operational and financial action plans (R-OFAPs) • Official notification of registration of new entities • R-OFAPs • Adoption of a reform act or policy statement • State Electricity Regulatory Commission (SERC) established 	<ul style="list-style-type: none"> • Continued commitments to reforms by the state government. • Political will • State government's commitment to reforms • State government's commitment to reforms
<p>Outputs Establishment of new sector entities</p>	<ul style="list-style-type: none"> • Sector restructuring plan adopted • Segregation of assets and liabilities • Appointment of board of directors 	<ul style="list-style-type: none"> • R-OFAPs • Official notification by the state government • R-OFAPs • Official notification by the state government 	<ul style="list-style-type: none"> • Cooperation from employees of the agencies to be restructured • Continued assistance by Power Finance Corporation (PFC) and the state government. • Political considerations

Design Summary	Performance Indicators/Targets	Monitoring Mechanisms	Assumptions and Risks
Operationalizing new sector entities	<ul style="list-style-type: none"> • Transfer of personnel to newly created agencies 	<ul style="list-style-type: none"> • R-OFAPs • Progress reports from the newly created agencies 	<ul style="list-style-type: none"> • Cooperation from personnel affected by the transfers
<p>Operationalizing State Electricity Regulatory Commission (SERC)</p> <p>100% Metering</p> <p>Reduction of commercial losses</p> <p>Improvement of availability and quality of supply</p>	<ul style="list-style-type: none"> • Transfer of assets • Develop performance indicators and sign memorandums of understanding with the Government • Adequate funds for SERC operations allocated • Customer charter and commercial standards finalized • Tariff rulings awarded in a timely manner • All consumers metered by dates specified in R-OFAPs • Anti-theft legislation enacted • Construction of transmission and distribution facilities, improvements of existing generating facilities as agreed between PFC and SEBs 	<ul style="list-style-type: none"> • R-OFAPs • Progress reports from new agencies • Signed memorandums of understanding • State government budget • SERC publications • SERC publications • Progress reports • State government notification • Project reports • Review missions 	<ul style="list-style-type: none"> • Commitment from the state government. • Commitment to continue reforms by the state government and new agencies • State government's commitment • Regulatory risk - independence of regulator • Regulatory risk - independence of regulator • Delays in procurement • Availability of counterpart funds • Political considerations • Availability of counterpart funds

Inputs ADB loan of \$150 million Selection of subborrowers	At least four subborrowers selected	<ul style="list-style-type: none"> • PFC's progress reports 	<ul style="list-style-type: none"> • Competitiveness of ADB funds through PFC
Selection and implementation of subprojects	Subprojects worth at least \$250 million selected and approved	<ul style="list-style-type: none"> • PFC's progress reports 	<ul style="list-style-type: none"> • Availability of counterpart funds

INDIA POWER SECTOR

A. Introduction

1. To sustain the pace of economic growth achieved during the last decade in India, which is necessary for significantly reducing the incidence of poverty, development of the basic infrastructure facilities is essential. Electricity is one of the key inputs for India's overall socioeconomic development, especially in commercial and industry sectors, and has strong linkages to other infrastructure elements, such as transport and telecommunications. Basic human needs, such as water supply and sewerage, and many social welfare activities, such as education and health care, are also directly or indirectly supported by electricity supply. Although India's power sector has seen impressive growth with, for example, generation capacity increasing from 2,000 megawatts (MW) in 1950 to 105,000 MW in 2002, it still suffers from severe deficiencies. These include chronic power shortages, unacceptably high system losses, poor supply reliability, and highly inefficient utility operations.

2. Earlier attempts, during the 1980s and early 1990s by the Government, multilateral and bilateral aid agencies, and state governments to rectify these deficiencies have had only limited success. Attempts were often piecemeal, directed at micro-level corrections within the existing institutional framework, and lacked a holistic approach to address the basic power sector problems. It is now being realized that comprehensive sector reforms, supported by investments targeted to remove technical and institutional bottlenecks, are essential to improve the performance of the sector.

B. The Sector Setup

1. Organization

3. India consists of 29 states and six union territories with a total population of over 1 billion. The organization of the power sector is determined by the country's federal structure. The subject of electricity is covered under the Concurrent List in the Constitution of India, implying that both the central Government and state governments have the power to make legislation for the sector. As a result, all major issues affecting the power sector require concurrent action by the central Government and state governments. The Government's Ministry of Power provides overall guidance to the sector through the Central Electricity Authority. The recently established Central Electricity Regulatory Commission is empowered to regulate the central power utilities in accordance with the Electricity Regulatory Commission Act, 1998. The central power utilities include the National Thermal Power Corporation (NTPC), the National Hydroelectric Power Corporation (NHPC), and the Nuclear Power Corporation (NPC), which are engaged in generation, and the Powergrid Corporation, which is engaged in interstate power transmission. The Government also owns financing institutions devoted solely to power sector lending such the Power Finance Corporation Limited (PFC) and the Rural Electrification Corporation. Recently, the Government established the Power Trading Corporation, to be responsible for power trading among states and between states and central power utilities.

4. At the state level, the state governments control the sector through 21 state electricity boards (SEBs)¹ and 14 electricity departments (EDs). These SEBs and EDs are responsible for generation, transmission, and distribution, usually within their own states and territories. The

¹ Seven of these SEBs have been restructured into separate generation, transmission, and distribution entities.

central power utilities own and operate 30% of the country's total generation capacity, while SEBs and EDs have 59% of the total. In addition, five privately owned utilities, operating in certain urban centers and responsible for power distribution within their franchised areas, and some independent power producers have a share of 11% of the generation.

C. State Electricity Boards

5. Most of the SEBs are vertically integrated entities, and are wholly owned by their respective state governments. The Electricity Act of 1910 and the Electricity (Supply) Act of 1948 provide the legal basis for their establishment and operation. Since their establishment, the SEBs have grown substantially in terms of meeting the demand for electricity and now account for approximately 80% of commercial electricity sales in the country. Although the electricity acts allowed considerable managerial and financial autonomy to the SEBs, most state governments used them as vehicles for pursuing their social and political objectives. These included low tariffs for agricultural and residential consumers and employment to attract political support. The state governments also tend to interfere with SEBs' day-to-day operations, thereby complicating the task of SEB management. These interventions have led to the SEBs' deteriorating financial performance, which has become the main issue hindering power sector development in India.

6. A sick and underperforming power sector has far-reaching repercussions on other sectors of the economy. Unavailability of adequate and reliable power is impeding the Government's efforts to attract domestic and foreign investment to sectors, such as telecommunications and information technology, which are vital to the Government's medium-term development plans. If not improved, it will be one of the major constraints to the economic development of India in the coming years. The cash-starved SEBs have also been a big drain on the state governments' financial resources. The diversion of resources to SEBs has forced state governments to curtail their activities in other priority sectors, such as health and education, which are essential for poverty reduction. Power sector reforms at the state level therefore require greater momentum to foster overall economic development and to conserve state financial resources to meet important social and other development objectives.

D. Central Power Utilities

7. To address the shortage of generating capacity and to improve the efficiency of generation, the Government established three central sector power utilities—NTPC, NHPC, and NPC in 1975. Their mandate was to efficiently generate bulk power for sale to SEBs. In 1989, the Powergrid Corporation was established as a transmission and dispatch agency by amalgamating the transmission and power dispatch facilities of other central power utilities. Recently, the Government has established the Power Trading Corporation, which will take over the responsibility for power trading among central utilities and SEBs as well as among SEBs. In addition to these wholly owned companies, the Government also owns shares in special-purpose power generating companies. The central agencies, such as NTPC, NHPC, and Powergrid, are seriously affected by the poor financial health of most SEBs, as has been evidenced several times in the past when excessive accounts receivable from those SEBs seriously impaired the central agencies' financial liquidity.

E. Sector Performance

1. Technical Performance

8. In terms of capacity addition, performance during the Eighth Plan (FY1993–1997) was only 54% of target, having added only 16,422 MW instead of the targeted 30,538 MW. The Ninth Plan envisaged a total addition of 40,245 MW during the FY1998–2002 period, consisting of 11,909 MW by central sector agencies, 10,748 MW by state utilities, and 17,588 MW by the private sector independent power producers (IPPs). However, the actual capacity addition fell far short of target, with the central sector meeting only 37.8% and the private sector 28.8% of target. The state sector performed better, achieving 87.9% of target. Given the SEBs' difficulties associated with establishing adequate escrow accounts to service power purchase contracts and the attendant problems in achieving financial closure for IPP projects currently in India, realizing the full IPP contribution to the generation addition appears to be unlikely in the immediate future.

9. While new generation addition has fallen short of target, the existing generating plants, mainly coal-fired thermal power plants, have shown improved performance during the recent past. With a renovation and modernization program for thermal power stations, introduced in the early 1990s, the plant load factor²—a performance indicator—has increased from 64.4% in FY1997 to 69.9% in FY2002. According to the Common Minimum National Action Plan (para. 10 of main text), the overall plant load factor was expected to increase to a minimum of 65% for state owned utilities and to a national average of 70% by 2002. However, given the substantial shortage in capacity addition, these improvements in the performance of existing generating plants are inadequate to narrow down the demand-supply gap. Although, by the end of FY2002, India had a total installed capacity of 105,000 MW, there was a peak power deficit of 12.6% and an energy deficit of 7.5%. The per capita electricity consumption stood at 355 kilowatt-hour (kWh) in FY2002, compared to, for example, 719 kWh for the People's Republic of China.

10. Operational performance, measured in terms of transmission and distribution (T&D) losses, has also been not satisfactory. T&D losses are reported to have increased from 24.5% in FY1997 to 27.8% in FY2002 for the entire country. In the absence of adequate metering arrangements, especially for agricultural consumers, part of the losses used to be lumped together with agricultural consumption. The actual losses are, therefore, thought to be much higher, with some SEBs now reporting T&D losses as high as 45–57%.³ The major reasons for such high losses are pilferage of energy through unauthorized connections and tampering of meters, and technical losses originating from overloaded distribution networks.

2. Financial Performance

11. Since SEBs account for almost 80% of commercial electricity sales in the country, the financial performance of the entire sector, including that of central sector agencies, is heavily dependent on the performance of SEBs. Under the Electricity (Supply) Act of 1948, amended in 1984, the financial performance of the SEBs used to be measured in terms of rate of return (ROR) on net fixed assets with a mandated minimum ROR of 3%. However, none of the SEBs achieved this mandated minimum without a subsidy from their state governments, and only Karnataka achieved a 3% ROR with the government subsidy. All the others posted negative RORs. As indicated in Table A2 below, the consolidated performance of all SEBs show that the

² Defined as the ratio of actual capacity utilization of the plant to its rated capacity utilization.

³ For example, T&D losses for Delhi are reported to be 57%.

minimum required value was not achieved during the recent past, and indeed, deteriorated over the period indicated. The major reasons for this unsatisfactory financial performance were the increasing gap between the cost of supply and the average tariff, and the decreasing recovery rate. These figures stood at Rs1.10 per kWh and 68.6%, respectively, in FY2002.

Table A2. Financial and Operating Performance of State Electricity Boards

Fiscal Year	Rate of Return (%)	Gross ^a Subsidy (Rs billion)	Cost of Supply (paise/kWh)	Average Tariff (paise/kWh)	Agriculture Tariff (paise/kWh)	Cost Recovery (%)	T&D Losses (%)
1994	-12.3	111	149.1	116.7	17.9	78.3	20.2
1995	-13.1	135	163.4	128.0	18.8	78.3	21.1
1996	-16.4	168	179.6	139.0	19.0	77.4	22.3
1997	-19.6	200	215.6	165.3	21.2	76.7	24.5
1998	-22.9	243	239.7	180.3	20.2	75.2	24.8
1999	-34.2	288	263.1	186.8	21.0	71.0	26.5
2000	-43.1	328	305.1	207.0	22.6	67.8	30.8
2001	-39.1	370	327.2	226.3	35.4	69.2	29.9
2002	-44.1	427	349.9	239.9	41.5	68.6	27.8

T&D = transmission and distribution.

^a Subsidy to agriculture and residential customers.

Source: *Annual Report on Working of State Electricity Boards & Electricity Departments*. Planning Commission.

12. The poor financial performance of SEBs and the resulting shortage of liquidity have also adversely affected the SEBs' operational efficiency and led to increasing T&D losses. With the limited financial resources available, the tendency of most of the SEBs has been to invest a larger proportion in generation to address the demand-supply gap and less in transmission and distribution. Over the years, this approach has led to inadequate distribution facilities resulting in overloading, inadequate maintenance, high T&D losses, and poor supply reliability, which in turn led to insufficient revenue—a vicious circle.

F. Government Policies and Plans

13. For more than half a century, the Indian Electricity Act of 1910 and the Electricity (Supply) Act of 1948 provided the basic framework for power sector operations. They provided for the establishment of SEBs, EDs, and central sector utilities and contributed to the current status of development of the sector serving a population of more than 1 billion people. However, with the worldwide changes in economic and financial outlook and technological developments, the sector needed comprehensive reforms to provide the flexibility required to meet the challenges that lay ahead. The Government's initial approach to the issue was not comprehensive enough. For example, to promote private sector participation in generation projects, the Government, in 1991, amended certain parts of the Electricity Act, 1910 to facilitate mobilization of domestic and foreign private funds and to allow incentives, such as high returns on investments. Although there was some initial enthusiasm from the private sector, these measures have not resulted in more than 6,800 MW of capacity addition so far. The problem lay with the structural weaknesses of the sector setup, especially with the SEBs whose financial performance did not provide sufficient comfort to potential investors. In 1993, as a result of efforts made by the National Development Council,⁴ a high-level committee on power was constituted. In its report, submitted in October 1994, the committee recommended

⁴ The National Development Council is India's highest political body comprising the chief ministers of all the states in India, and chaired by the Prime Minister.

(i) organizational reforms at the state level aimed at unbundling generation, transmission, and distribution operations of the SEBs and commercializing the ensuing entities; (ii) organizational reforms at the national and regional levels aimed at freeing the central sector agencies from tight government control, reducing the Government's equity in these agencies so as to enable participation of the private sector on a joint-venture basis; (iii) large-scale involvement of the private sector in generation and transmission, with sponsors selected through transparent and competitive bidding procedures; (iv) creation of national and regional tariff boards to take over the responsibility for tariff setting independently of the central Government and state governments; and (v) a progressive phasing out of subsidies to agricultural consumers. These recommendations ultimately led to the adoption by the National Development Council of a Common Minimum National Action Plan for Power in 1996. To operationalize some of the recommendations, the Electricity Regulatory Commissions Act was enacted in 1998, enabling the establishment of independent regulatory bodies at the central and state levels. Although this was a significant step toward improving the sector, it was not comprehensive enough to cover complete sector restructuring. The Government set up the Central Electricity Regulatory Commission under the Act, to be responsible for regulating power sector operations at the national level, related to generation and interstate transmission. The state governments were given the option to set up their own state electricity regulatory commissions (SERCs) under the Act or under bills to be passed by their own legislative assemblies. As a result and sometimes on their own, some states have taken the initiative of reforming their power sectors. Foremost among them was Orissa, which, with World Bank assistance, completely unbundled its SEB and established the country's first SERC in 1996. The SEB's power generation business was entrusted to two power corporations, transmission to a grid corporation, and distribution operations to four companies that were subsequently privatized. Reforms in Orissa were followed by similar reforms in Haryana, Andhra Pradesh, Karnataka, and Uttar Pradesh with World Bank assistance and in Gujarat and Madhya Pradesh with ADB assistance.

14. To promote more comprehensive reforms in the power sector, the Ministry of Power has finalized the draft Electricity Bill 2001. As in the case with concurrent subjects (see para. 4 of main text), consultations have been held with state governments on the contents of the draft, and the final version was presented to Parliament in 2001.⁵ This Bill attempts to consolidate previous acts relating to all power sector operations including setting up of independent generation, transmission, and distribution companies, regulatory agencies, national and state-level power sector planning, consumer protection and dispute resolution, and safety aspects. Once enacted, the Bill will repeal previous electricity acts, thereby providing a single comprehensive body of legislation for the entire range of sector operations. As in the case with previous acts, the Bill provides for any state government to hold in abeyance, within its territory, provisions of the Bill for a period not exceeding 6 months from the date of enactment of the Bill in order to address any transitional issues.

15. The most notable features of the Bill are (i) open access to transmission systems with transmission service providers prohibited from holding interests in generation assets; (ii) compulsory metering of all consumers within 2 years of enactment of the Bill; (iii) facilitating the entry of power traders as opposed to distribution service providers; (iv) prioritizing the use of proceeds from privatizing power sector assets to compensate staff affected by such privatization and then to retire debts and other liabilities; and (v) promoting more targeted and transparent subsidies to the rural and economically weaker consumers. While providing a comprehensive framework for improvement of the power sector, the Bill also provides the necessary flexibility to the state governments to determine their own pace and priorities for sector reform.

⁵ The Bill is still awaiting approval by Parliament.

LIST OF SUBPROJECTS ALREADY IDENTIFIED

West Bengal State Electricity Board

Project No.	Name of Project	Project Cost (Rs. Millions)	Project Cost (\$millions)		
			Foreign	Local	Total
Distribution Projects					
1	Distribution Scheme for Mirpur(Amtola) under 24-Pargana (South) Dist. Circle.	46.19	0.58	0.38	0.96
2	Distribution Scheme for Kulpi Port under 24-Pargana (South) Dist. Circle.	15.36	0.19	0.13	0.32
3	Distribution Scheme for Moshishpota under 24-Pargana (South) Dist. Circle.	15.94	0.20	0.13	0.33
4	Distribution Scheme for Goalafatak under 24-Pargana (North) Dist. Circle.	12.27	0.15	0.10	0.26
5	Distribution Scheme for Belmuri under Hoogly Dist. Circle.	13.59	0.17	0.11	0.28
6	Distribution Scheme for Dubrajpur under Birbhum Dist. Circle.	10.89	0.14	0.09	0.23
7	Distribution Scheme for Jhargram under Midnapur Dist. Circle.	116.50	1.46	0.97	2.43
8	Distribution Scheme for Contai under Tamluk Dist. Circle.	30.10	0.38	0.25	0.63
9	Distribution Scheme for Raipur under Barkura Dist. Circle.	77.24	0.97	0.64	1.61
10	Distribution Scheme for Raghunathpur under Purulia Dist. Circle.	25.01	0.31	0.21	0.52
11	Distribution Scheme for Chapra under Nadia Dist. Circle.	25.85	0.32	0.22	0.54
12	Distribution Scheme for Amtola under Murshidabad Dist. Circle.	42.84	0.54	0.36	0.89
13	Distribution Scheme for Lalgola under Murshidabad Dist. Circle.	18.79	0.23	0.16	0.39
14	Upgradation of existing distribution network in 14 Dist. Circles	849.70	10.62	7.08	17.70
Sub-Total		1,300.27	16.25	10.84	27.09
Transmission Projects					
15	132/33KV S/Stn at Mihispota and associated lines	178.90	2.24	1.49	3.73
16	Installation of 1 nos. 160 MVA, 220/132 KV Transf. At Jeerat	39.50	0.49	0.33	0.82
17	132/33KV S/Stn at Amtola and associated lines	435.90	5.45	3.63	9.08
18	132/33KV S/Stn at Belmuri and associated lines	138.90	1.74	1.16	2.89
19	132/33KV S/Stn. at Contai and associated lines	583.80	7.30	4.87	12.16
20	132/33KV S/Stn. at Jhargram and associated lines	227.10	2.84	1.89	4.73
21	132/33KV S/Stn. at Kulpi Port and associated lines	188.30	2.35	1.57	3.92
22	Domjur-Chaditala 132 KV D/C Lines and bay ext. at Domjur & Chanditala	68.20	0.85	0.57	1.42
Sub-Total		1,860.60	23.26	15.51	38.76
Total		3,160.87	39.51	26.34	65.85

Maharashtra State Electricity Board

Project No.	Name of Project	Project Cost (Million Rs.)	Project Cost (\$millions)		
			Foreign	Local	Total
	Renovation & Modernization Projects				
1	Life extension scheme for Nasik TPS Units 1&2 (2x140 MW)	2,800.00	35.00	23.33	58.33
2	Life Extension scheme for Koradi TPS Units 1, 2, 3&4 (2x140 MW)	4,800.00	60.00	40.00	100.00
3	Life extension scheme for Bhusawal TPS Unit 1 (62.5 MW)	625.00	7.81	5.21	13.02
4	Life extension scheme for Parli TPS Units 1&2 (2x30 MW)	600.00	7.50	5.00	12.50
5	Life extension scheme for Paras TPS (62.5 MW)	625.00	7.81	5.21	13.02
	Subtotal	9,450.00	118.13	78.75	196.88
	Transmission Projects				
6	R&M of about 30 nos. of EHV sub stations under Phase-III	250.00	3.13	2.08	5.21
7	R&M scheme for EHV sub stations for Kolhapur zone	113.00	1.41	0.94	2.35
8	R&M scheme for EHV sub stations for various districts	800.00	10.00	6.67	16.67
9	Establishment of 220 kV sub station at Amalner & associated works	334.00	4.18	2.78	6.96
	Sub-Total	1,497.00	18.71	12.48	31.19
	Distribution Projects				
10	System improvement scheme for Aurangabad	30.00	0.38	0.25	0.63
11	Bhandup-Thane-Belapur	243.40	3.04	2.03	5.07
12	Nagpur Urban Augmentation Sutgiri, chinteshwar, MRS etc.	38.50	0.48	0.32	0.80
13	Bhandup-Thane-Mulund four 22/11 kV sub-stations	162.00	2.03	1.35	3.38
14	Sinhastha Kumbhamela	71.90	0.90	0.60	1.50
15	Pune Urban	50.00	0.63	0.42	1.04
16	R&M scheme for various districts in Maharashtra	1,260.70	15.76	10.51	26.26
	Sub-Total	1,856.50	23.21	15.47	38.68
	Total	12,803.50	160.04	106.70	266.74

Tamil Nadu Electricity Board

Project No.	Name of Project	Project Cost (Million Rs.)	Project Cost (\$millions)		
			Foreign	Local	Total
1	Master Plan for reduction of T&D Losses in Dindigul Distribution Circle.	1,519.10	18.99	12.66	31.65
2	230 KV Links to Hosur 400 KV S/Stn.	151.00	1.89	1.26	3.15
3	230 KV missing links in EHT Grids in TNEB	340.00	4.25	2.83	7.08
	Total	2,010.10	25.13	16.75	41.88

Assam State Electricity Board

Project No.	Name of Project	Project Cost (Million Rs.)	Project Cost (\$millions)		
			Foreign	Local	Total
1	132 kV Agia-Boko S/C line and 2x16 MVA, 132/33 kV Boko S/s & associated downstream lines.	224.10	2.80	1.87	4.67
2	132 kV Jorhat-Bokakhat S/C line & 132/33 kV, 2x16 MVA Bokakhat S/S	130.30	1.63	1.09	2.71
3	132 kV Lanka-Diphu line & 132/33 kV, 2x20 MVA Diphu S/S	127.52	1.59	1.06	2.66
4	132 kV LILO at Moran from 132 kV Moran-Dibrugarh S/C Line & 132/33 kV, 2X25 MVA Moran S/Stn.	95.43	1.19	0.80	1.99
5	220/132 kV, 2x25 MVA Agia S/S & associated lines	62.88	0.79	0.52	1.31
6	132/33 kV, 2x16 MVA Agia S/S & associated lines	10.00	0.13	0.08	0.21
7	132/66 kV, 1x16 MVA & 132/33 kV, 2x16 MVA Dhemji S/S	44.73	0.56	0.37	0.93
8	132/33 kV, 2x25 MVA Nazira S/S and associated lines	55.58	0.69	0.46	1.16
9	132/33 kV, 2x16 MVA Umranshu S/S and associated lines.	35.80	0.45	0.30	0.75
10	132/33 kV, 2x20 MVA Bokajan S/S and associated lines.	41.00	0.51	0.34	0.85
12	Augmentation of 132/33 kV, 2x16 MVA Rangia S/S by 2x25 MVA Trans.	25.26	0.32	0.21	0.53
13	Augmentation of 132/33 kV, 1x12.5 MVA Depota S/S by 1x31.5 MVA Trans.	9.80	0.12	0.08	0.20
14	Augmentation of 132/33 kV, 1x16 MVA Jorhat S/S by 1x25 MVA Trans.	12.65	0.16	0.11	0.26
	Total	875.05	10.94	7.29	18.23

Grand Total 18,849.52 235.62 157.08 392.70

SUMMARY OF A TYPICAL REFORM-ORIENTED OPERATIONAL AND FINANCIAL ACTION PLAN (R-OFAP)

A. Overview

1. The overview consists of a description of the state power sector including information on existing power generation, transmission, and distribution facilities; previous investments in the sector; and an analysis of the future investment needs. It also includes recommendations of the various power sector reform committees and consultants, on which the R-OFAP milestones are based.

B. Power Sector Reforms

2. The R-OFAP contains a number of detailed reform steps, divided into broad categories. Each reform step is associated with a target completion date, responsibility center, and resources required. The following are extracted from the R-OFAPs for Karnataka and West Bengal.

1. Structural Reforms

3. These include: submission of recommendations for sector unbundling; identification of assets and liabilities; restructuring of the sector into separate functional entities; segregation of assets and operational areas; issue of procedures for appointment of professionals into structured entities; and appointment of boards of directors.

2. Financial Reforms

4. These include: adoption of generally accepted accounting principles (GAAP); developing financial instruction manuals; introduction of activity-based costing; developing MIS to monitor revenue and expenditure in activity centers; training; finalization, approval, registration, and operationalization of Pension Trust; identification and valuing fixed assets; action plan for clearing arrears and its implementation; identification of outstanding liabilities; preparation of financial projections; preparation of provisional balance sheets for restructured entities; and settlement of government subsidies according to regulator's rulings.

3. Transfer Scheme

5. These include: transfer of personnel to newly created agencies; and Government to arrange for meeting unfunded pension liabilities.

4. Human Resources Development

6. These include: developing organization structures for new agencies; assessment of staffing requirements for the new agencies and training needs; preparation and implementation of a voluntary separation scheme; and preparation and implementation of incentive schemes for employees.

5. State Electricity Regulatory Commission (SERC)

7. These include: establishing SERC; providing SERC with adequate budget and infrastructure facilities; issue of customer charter and commercial standards; and carrying out

effective communication and information campaigns to disseminate information to various stakeholders.

6. Tariff Rationalization

8. These include: establishing working groups to compile and analyze load forecasts, availability of power, classification of costs and their allocation, costs to various consumer groups, revenue requirements, rate of return, etc.; developing tariff proposals for consideration by SERC; and modifying and revising tariffs in accordance with SERC rulings.

7. Regional Business/Profit Centers

9. These include: deciding to establish business or profit centers; signing memorandums of understanding for their performance; evaluating performance of business centers; and developing schemes for incentives/disincentives for motivating business centers to achieve targets in the memorandums of understanding.

POWER FINANCE CORPORATION

1. The Power Finance Corporation (PFC) was established by the Government in 1986 as an independent public sector company under the Companies Act and started operations in January 1988. Its main objectives are to finance, facilitate, and promote power sector development in India, including private sector power projects. PFC's areas of financing cover all types of power projects other than rural electrification. In addition to lending operations, PFC is also involved in providing technical assistance and advisory services to state electricity boards (SEBs). As a financial institution, PFC was accorded sovereign rating of Ba2¹ by Moody's Investor Service and AAA by two local credit rating agencies in 2002.

2. The memorandum of association of PFC prescribes that its board will consist of between three and 15 directors. Currently, it has four full-time members including the chairperson/managing director and two part-time members representing the Ministry of Power. The chairperson/managing director is in overall charge of PFC operations. Its operations are organized into three separate groups, each headed by a full-time director. The Director (Institutional Development and Administration) is responsible for human resources, legal aspects and administration, management systems, and institutional appraisal and development of borrowing power sector clients. The Director (Projects) is in charge of project appraisal and administration, management information systems, and technical development. The Director (Finance and Financial Operations) is responsible for financial and legal operations, fund generation, international financing operations, and loan disbursement and recovery. PFC's loan and project appraisal and administration are structured on a regional basis, with five regions—northern, southern, western, eastern, and northeastern—covering the entire country, thereby providing a better regional focus. At the end of FY2002, it had a total staff of 272, consisting of 157 employees of executive level and above, and 115 in other categories. PFC's organization chart is in Appendix 6.

3. Human resources development has been a high priority activity for PFC. In the early 1990s, the United States Agency for International Development (USAID) and the former Overseas Development Administration of the United Kingdom provided substantial assistance to train PFC and some SEB staff in project preparation, project appraisal, and financial operations. As a result of this early training, PFC now has a skilled workforce capable of successfully handling all aspects related to power sector lending. To complement its development of human resources, PFC, in 1998, also introduced modern computer-based management systems. The areas computerized include human resources management, financial and operational management such as financial accounting, bond management, loan accounting, recoveries, and project and loan appraisal and sanction, and office automation. These developments have largely contributed to the substantial expansion of its operations without increasing its overhead costs. In fact, PFC has been able to increase disbursements by 3.3 times and net profits by 3.1 times while marginally increasing its staff resources by 17% during the period FY1996–2001. In 2002, PFC plans to add to the integrated system functions of financial planning, fund management, and asset-liability and risk management.

4. PFC's operational philosophy and procedures are guided by its Operational Policy Statement (OPS). Developed in 1990 in close consultation with ADB and the World Bank, and since then revised to reflect recent changes in the India power sector, the OPS provides a

¹ This is limited by the sovereign rating for the country.

comprehensive set of guidelines for power sector lending. It defines PFC's mission and objectives and sets out guidelines for project identification, eligibility, lending modalities, exposure limits, guarantees and security, and project administration including procurement procedures. It also specifies limits for key financial parameters such as debt-equity ratio and debt service coverage ratio to ensure PFC's own financial health while lending to others. The key features of the revised OPS are (i) emphasis on power sector reforms in addition to project-based lending; (ii) provision of other services such as consulting and advisory services, foreign exchange management, and lender's engineering services; and (iii) assistance to private sector projects. A summary of the OPS is in Supplementary Appendix B.

5. The objectives set out in the OPS have been incorporated into PFC's latest corporate plan: The Corporate Strategic Plan, 2007. The plan includes projections for the 9th five-year plan (FY1997–2002), and the 10th five-year plan (FY2002–2007), and recommendations for a possible approach to the 11th five-year plan (FY2007–2012). The corporate plan also includes the recommendations of a high-level committee on financial operations of PFC. Some of the recommendations of that committee are to (i) increase PFC's investments in public sector power projects by up to 20% of the total requirements and in private sector projects by up to 5% and (ii) reach a compound annual growth rate of 30–35% in terms of disbursements and loan approvals.

6. According to the 15th Electric Power Survey, about 72,500 MW of new generating capacity is required to be added during the 10th five-year plan (FY2002–2007). Taking into account the associated investments in transmission and distribution, the total investment requirements during the 10th plan are indicated in Table A5.1 below. PFC's planned disbursements to support this development program are also indicated.

Table A5.1: Total Sector Investment Needs and Power Finance Corporation Share

Year	Capacity Addition (MW)	Total Investments (Rs billion)	PFC Share (Rs billion)
2003	12,500	700	46
2004	13,500	756	52
2005	14,500	812	95
2006	15,500	868	110
2007	16,500	924	130
Total	72,500	4,060	433

MW = megawatts.

Source: Power Finance Corporation. Corporate Strategic Plan 2007.

7. Given the chronic shortage in energy and peak power capacity in India, the assumed capacity addition appears to be reasonable. However, PFC's ability to finance its share of the investments, indicated in Table A5.1, will depend on its ability to raise funds. For this purpose, PFC expects to access provident funds, pension funds, and long-term operation funds, in addition to funds available under various government initiatives and from multilateral agencies. Complementary to project-based lending, PFC's corporate plan provides for supporting reforms and restructuring of the state power sector. It has already started promoting power sector reforms and restructuring of sector agencies, by providing them with technical advice and financial support.

8. Over the past 5 years, from FY1998 to FY2002, PFC's financial performance has been on a sound level. PFC has exceeded all the financial performance targets¹ agreed with the Ministry of Power every year for this period. Both the return on assets and the return on equity in FY2002 indicate adequate profitability of 5.0% and 20.4%, respectively. The debt service coverage ratios (DSCRs) are also higher than the minimum 1.2 times. PFC's capital position, as measured by its risk-weighted capital adequacy ratio (CAR),² was 25.6% in FY2002, which is satisfactory by international standards.³ The financial position of PFC has stabilized for a variety of reasons. First, PFC continuously expanded its loan size to support growing investment needs of India's power sector. Second, nonperforming loans amounting to about Rs7.5 billion were restructured between FY1997 and FY2000 and recovered cash generation. Consequently, PFC maintained high overdue recovery rates of 97–100% after FY1998. Third, funding costs have been relatively low due to PFC's access to tax-free bonds, tax exemption on loans to infrastructure projects, and external borrowing with government guarantees. A summary of PFC's actual financial performance is given in Table A5.2 and details are in Appendix 7.

Table A5.2: Power Finance Corporation Audited Actual Financial Performance Indicators, FY1998-2002

Financial Indicators	FY1998	FY1999	FY2000	FY2001	FY2002
Return on Equity ^a (Pretax, %)	25.8	26.7	26.8	22.8	25.3
Return on Equity ^a (Post-tax, %)	25.5	21.9	21.4	17.9	20.4
Return on Asset (Pretax, %)	7.4	7.5	7.1	5.8	6.1
Return on Asset (Post-tax, %)	7.3	6.1	5.7	4.5	5.0
Debt Service Coverage Ratio	2.4	1.1	2.8	1.4	1.2
Capital Adequacy Ratio (%)	31.0	29.1	27.1	26.9	25.6
Due Collection Rate (%)	97.6	98.5	98.7	99.5	97.1
NPAs on Gross Loans: RBI ^b Norms (%)	10.7	2.8	6.0	3.4	4.4
NPAs on Gross Loans: BIS ^c Norms (%)	10.7	2.8	6.0	3.4	4.4

NPA = non performing asset.

^a Opening value, excluding reserves for bad and doubtful debts.

^b Reserve Bank of India prudential norms.

^c Bank for International Settlements recommended norms.

Source: PFC and staff findings.

9. For the next 10 years, PFC is targeting 20% average disbursement growth based annually on the 10th and 11th five-year plans. PFC's profitability is likely to remain acceptable over the near term due to the strong demand for funds from the state power sector as well as from central power utilities. Although aggressive expansion of the loan portfolio will result in a gradual decline of capital position and profitability on its assets, PFC is still expected to demonstrate sound financial performance. However, it should be noted that PFC's financial position will be depend on its internal risk control. First, PFC will be exposed to more market

¹ At the end of every financial year, PFC and MOP prepare a memorandum of understanding (MOU) to set financial targets, e.g., sanctions, disbursements, collection, return on assets, return on equity, operating ratio.

² The capital adequacy ratio (CAR) is the ratio of total qualified capital (equity [Tier I] plus mezzanine capital [Tier II, III]) to total risk-weighted assets including off-balance sheet items. The Reserve Bank of India (RBI) regulates the requirements and standards based on types of financial institutions. However, PFC has been exempted from the requirements. Accordingly, the calculation of CAR is based on RBI norms for nonbanking financial companies. When CAR was calculated on the two standard norms, RBI and BIS, the difference between the two values was less than 0.5% for FY2002.

³ The Basel Accord of the Bank for International Settlements recommends a mandatory CAR of 8% for banks in Organisation for Economic Co-operation and Development countries. For most DMCs, the guidelines recommend a minimum CAR of 12%.

risks by increased market borrowing and foreign currency funding and by decreased government support,⁴ such as that from tax-free bonds, equity contribution, and regulatory exemptions. Second, in the event that interest yields will be lower due to the competitive financial market in near term, PFC's other revenue sources besides the intermediary service are likely to be limited.⁵ Furthermore, PFC's profitability might be eroded by the deterioration in the quality of the SEB loan portfolio. Therefore, over the long term, PFC will be required to conduct timely risk control and thorough asset-liability management justified by an increase in the stable funding base at acceptable costs as well as by profit opportunities. A summary of PFC's projected financial performance is given in Table A5.3. Assumptions made in preparing the financial projections are in Supplementary Appendix C.

Table A5.3. Power Finance Corporation Projected Financial Performance Indicators, FY2003–2009

Financial Indicators	Covenanted FY2003 FY2004 FY2005 FY2006 FY2007 FY2008 FY2009							
	Targets							
Return on Equity (Pretax, %)	15.0	26.5	26.8	25.2	24.6	23.4	23.6	24.9
Return on Equity (Post-tax, %)	-	21.2	21.5	20.2	19.7	18.7	18.9	19.9
Return on Assets (Pretax, %)	-	6.1	6.1	5.4	4.8	4.4	4.2	4.2
Return on Assets (Post-tax, %)	-	4.9	4.9	4.3	3.9	3.5	3.4	3.4
Debt Service Coverage Ratio	1.2	1.6	2.3	2.0	2.3	2.1	1.4	1.8
Capital Adequacy Ratio (%)	12.0	24.8	25.0	22.6	21.2	20.1	19.1	18.4

Source: PFC and staff estimates.

10. As of 31 March 2002, PFC had 424 ongoing loans. In FY2002, 164 new loans totaling Rs66 billion (\$1.375 billion) to 43 borrowers were approved and disbursements totaling Rs52 billion (\$1.083 billion) were made during the same period. As a result, PFC's loans outstanding in FY2002 amounted to Rs165 billion (\$3.437 billion). More than 95% of PFC's loans outstanding have been lent to public power sector, consisting mainly of SEBs and state governments. In FY1999, PFC started lending to private sector clients; however, disbursement to this sector has been decreasing recently. The largest five borrowers are public sector utilities whose loans exceeded 1.4 times PFC's equity in FY2002. Accordingly, PFC's loan portfolio quality is exposed largely to financial conditions of public sector clients. Considering the current unstable financial situation of these SEBs, it is essential that PFC appropriately assess its asset quality, provisioning, and income recognition. As for income recognition, PFC accounts for its interest revenues on an actual cash basis in a conservative manner. However, PFC has not identified asset quality and its provisions in past years because it has been exempted from India's financial regulations applicable to these aspects. Reserve Bank of India (RBI) guidelines, called the prudential norms, regulate assets into four classes: standard, substandard, doubtful, and loss assets, based on the length of time the loan has been overdue. According to the RBI standards, PFC's nonperforming assets (NPAs) in FY2002 would be 4.4% substandard only. This portion of NPAs is now small enough to be fully covered by PFC's reserves for bad and doubtful debts, but PFC is required to establish its own policy norms for asset quality control and its provisioning to cushion the credit risk, such as default by large SEB borrowers. Over the

⁴ Government support, in the form of direct loans or tax-free bonds, has substantially declined over the years [e.g., 58% (FY1999) to 15% (FY2002)]. Particularly, the Government has made no direct loans since FY2001. There are no other explicit subsidies involved in PFC's lending operations.

⁵ Besides its core lending business, PFC has been starting fee-based services, such as engineering consultancy services.

past 5 years, the actual size of NPAs as per BIS norms⁶ has been the same as per RBI norms as indicated in Table A5.3. However, ADB will re-assess PFC's future NPAs based on both the Indian and the International asset classification norms on a regular basis to monitor portfolio quality and provisioning.

11. As per the OPS, PFC's relending rates are determined based on cost of raising resources and the state of the financial markets without breaching the operational policy or any other covenanted agreements. In the past, the indicated rates were higher than prime lending rates or medium-term lending rates in India. However, recent rates have been competitive compared to the market rates. These competitive interest rates from FY2001 stem from cheaper funding due to the recent improvement in PFC's borrowing ability from the market, rather than due to government support,⁷ which is currently decreasing. PFC has set different lending rates for different type of borrowers or projects. In addition, starting in June 2002, PFC has offered more competitive rates of 12.0–12.5% (including 0.5% rebate for timely repayment) for reforming states, and further market driven rates of 11.0–12.0% (including 0.5% rebate for timely repayment) for states with no default declaration as of August 2002.

Table A5.4. Power Finance Corporation Lending Rate, FY1998–2003
(%)

	FY1998	FY1999	FY2000	FY2001	FY2002	FY2003
PFC's Lending Rate ^a	16.5	15.0	14.0	13.5	12.5	11.0–12.5
Prime Lending Rate ^b	14.0	12.0–13.0	12.0–12.5	12.0–12.5	11.0–12.0	11.0–12.0
Medium-term Lending Rate ^c	14.5	13.5	13.5	13.0	12.5	12.5
Yield on average interest-earning assets ^d	17.1	17.3	15.5	15.4	14.1	13.1
Cost of borrowing on ave. interest bearing liabilities ^d	13.2	13.5	11.9	13.2	10.6	9.3
Spread ^d	3.8	3.8	3.6	2.1	3.5	3.8

^a Weighted average of differential rates, including 0.5% rebate for timely repayment.

^b Prime lending rate relates to five major banks, according to Reserve Bank of India annual report and its web site.

^c From Industrial Development Bank of India.

^d For FY2003, figures are estimated.

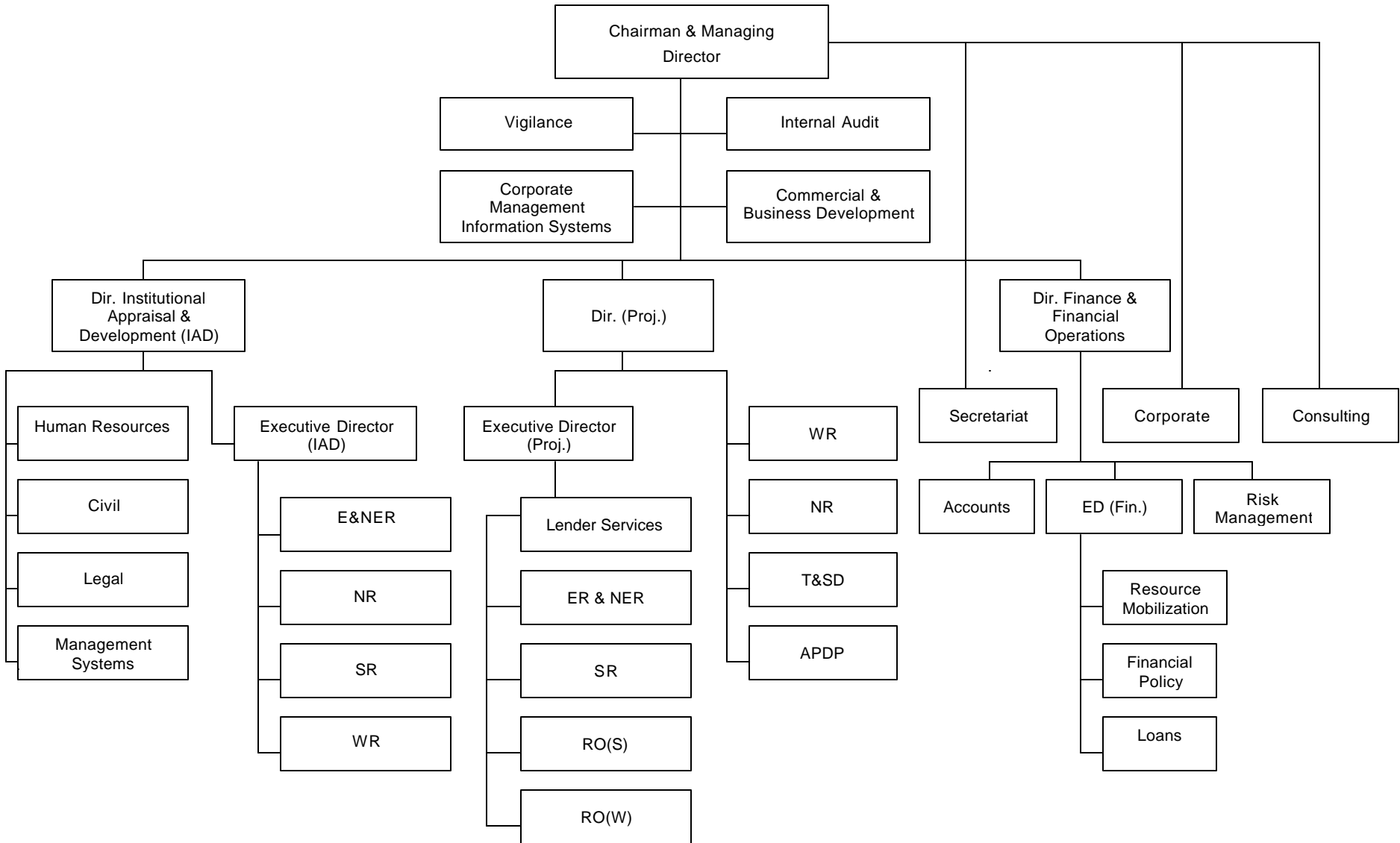
12. PFC's accounting records has been properly maintained. They are reviewed by qualified and statutory external auditors⁸ appointed by the Government. PFC also has an internal audit system that appears to be broadly commensurate with the size and nature of its business.

⁶ The definition of NPAs is based on length of overdue. RBI norms are less stringent than Bank for International Settlements norms. As per RBI asset classification, substandard: more than 6 months and less than 24 months, doubtful: more than 24 months, loss: identified by auditors, RBI, or the financial institutions; as per BIS asset classification, substandard: more than 3 months and less than 6 months, doubtful: more than 6 months and less than 12 months, loss: more than 12 months.

⁷ For FY2002, the benefit from tax-free or government-guaranteed bonds and loans amounted to only 0.2%, compared to the average lending rate of 12.5%.

⁸ The recent minor qualifications by auditors in FY2002 have been resolved. The qualifications were (i) understatement of Rs1.5 crore profit, consequent to the change in accounting policy in respect of provision for leave encashment, and (ii) an excess future claim from the Government with respect to the interest subsidy fund account.

POWER FINANCE CORPORATION: ORGANIZATION CHART



E&NER : Eastern & North-Eastern Region
 NR : Northern Region
 SR : Southern Region
 WR : Western Region
 RO(S) : Regional Office (South)
 RO(W) : Regional Office (West)

BALANCE SHEET - EQUITIES AND LIABILITIES

Rs. in Crores

	<u>1997-98</u> (Audited)	<u>1998-99</u> (Audited)	<u>1999-00</u> (Audited)	<u>2000-01</u> (Audited)	<u>2001-02</u> (Audited)	<u>2002-03</u> (Projected)	<u>2003-04</u> (Projected)	<u>2004-05</u> (Projected)	<u>2005-06</u> (Projected)	<u>2006-07</u> (Projected)	<u>2007-08</u> (Projected)	<u>2008-09</u> (Projected)
Equities & Liabilities												
A. Equities												
Paid-Up Capital	1030	1030	1030	1030	1030	1030	1030	1030	1030	1030	1030	1030
B. Reserves & Surplus												
Special Reserve	687	820	987	1162	1554	1960	2442	2945	3512	4128	4839	5703
General Reserves & Surplus	86	141	465	812	926	1018	1129	1250	1388	1539	1715	1928
Bonds Redemption Reserves	293	293	293	90								
Reserve Fund (RBI ACT)	154	262										
Profit & Loss Account	149	250	480	556	686	874	1094	1366	1676	2024	2436	2932
Total Equity (A+B)	2399	2796	3255	3650	4195	4882	5695	6591	7606	8721	10020	11593
C. Provision for Bad & Doubtful Debts	81	106	131	159	203	261	330	406	492	586	696	830
D. Long-term Liabilities												
Bonds	1536	1899	1823	3637	5027	5127	4608	4371	4267	3685	1941	1298
Term Loans	90	700	1425	1925	3649	6364	9272	16119	22881	30834	40979	51370
Foreign Currency Loan	1276	1788	2198	2104	2136	1853	1873	1914	1473	1075	1270	1193
Loans-GOI	1282	1529	1513	1467								
Line of Credit					170							
Total Long-term Liabilities	4184	5916	6959	9134	10982	13344	15753	22404	28621	35594	44190	53861
E. Current Liabilities	1115	373	1082	621	425	1771	1939	2072	2168	2225	2252	2246
Total Liabilities (D+E)	5299	6289	8041	9755	11407	15115	17692	24476	30789	37819	46442	56107
F. Interest Subsidy Fund from GOI	194	506	732	896	1093	806	660	535	439	371	331	316
Total Liabilities and Equities (A to F)	7974	9698	12159	14460	16898	21065	24377	32008	39327	47497	57490	68847

BALANCE SHEET - ASSETS

Rs. in Crores

	<u>1997-98</u>	<u>1998-99</u>	<u>1999-00</u>	<u>2000-01</u>	<u>2001-02</u>	<u>2002-03</u>	<u>2003-04</u>	<u>2004-05</u>	<u>2005-06</u>	<u>2006-07</u>	<u>2007-08</u>	<u>2008-09</u>
	(Audited)	(Audited)	(Audited)	(Audited)	(Audited)	(Projected)	(Projected)	(Projected)	(Projected)	(Projected)	(Projected)	(Projected)
Assets												
G. Fixed Assets-Owned/ Advance	38	38	40	41	42	47	56	65	74	83	81	79
Less Depreciation	2	2	3	3	4	1	1	1	1	2	2	2
Net Block-Fixed Assets	36	36	37	38	37	46	55	64	73	81	79	77
H. Fixed Assets-Leased	279	307	331	343	349	146	117	93	75	60	48	38
Addition	30	25	12	7								
Less Depreciation	40	80	122	162	203	29	23	19	15	12	10	8
Net Block-Leased Assets	269	251	222	188	146	117	94	74	60	48	38	30
I. Loans & Advances	6519	8379	10877	12431	14096	17678	19964	25430	31121	37382	45010	53694
J. Current Assets												
Bill Discounted	11	8	20	20	7	30	23	16	9			
Term Loans (Short-term)	502	695	652	848	2391	2044	2942	4049	5314	6736	8362	10295
Cash & Bank Balances	512	270	297	832	126	926	1063	2091	2425	2871	3560	4226
Others	125	60	55	103	95	224	237	284	325	379	440	524
Total Current Assets	1149	1033	1024	1803	2618	3224	4265	6440	8073	9986	12362	15045
Total Assets (G to J)	7974	9698	12159	14460	16898	21065	24377	32008	39327	47497	57490	68847
K. Off-Balance Sheet Items (Guarantees)	528	540	621	549	411	578	781	1030	1348	1742	2218	2785
Ratio:												
Capital Adequacy Ratio	31.0%	29.1%	27.1%	26.9%	25.6%	24.8%	25.0%	22.6%	21.2%	20.1%	19.1%	18.4%
Debt to Equity Ratio	1.7	2.1	2.1	2.5	2.6	2.7	2.8	3.4	3.8	4.1	4.4	4.6

PROFIT AND LOSS STATEMENT

Rs. in Crores

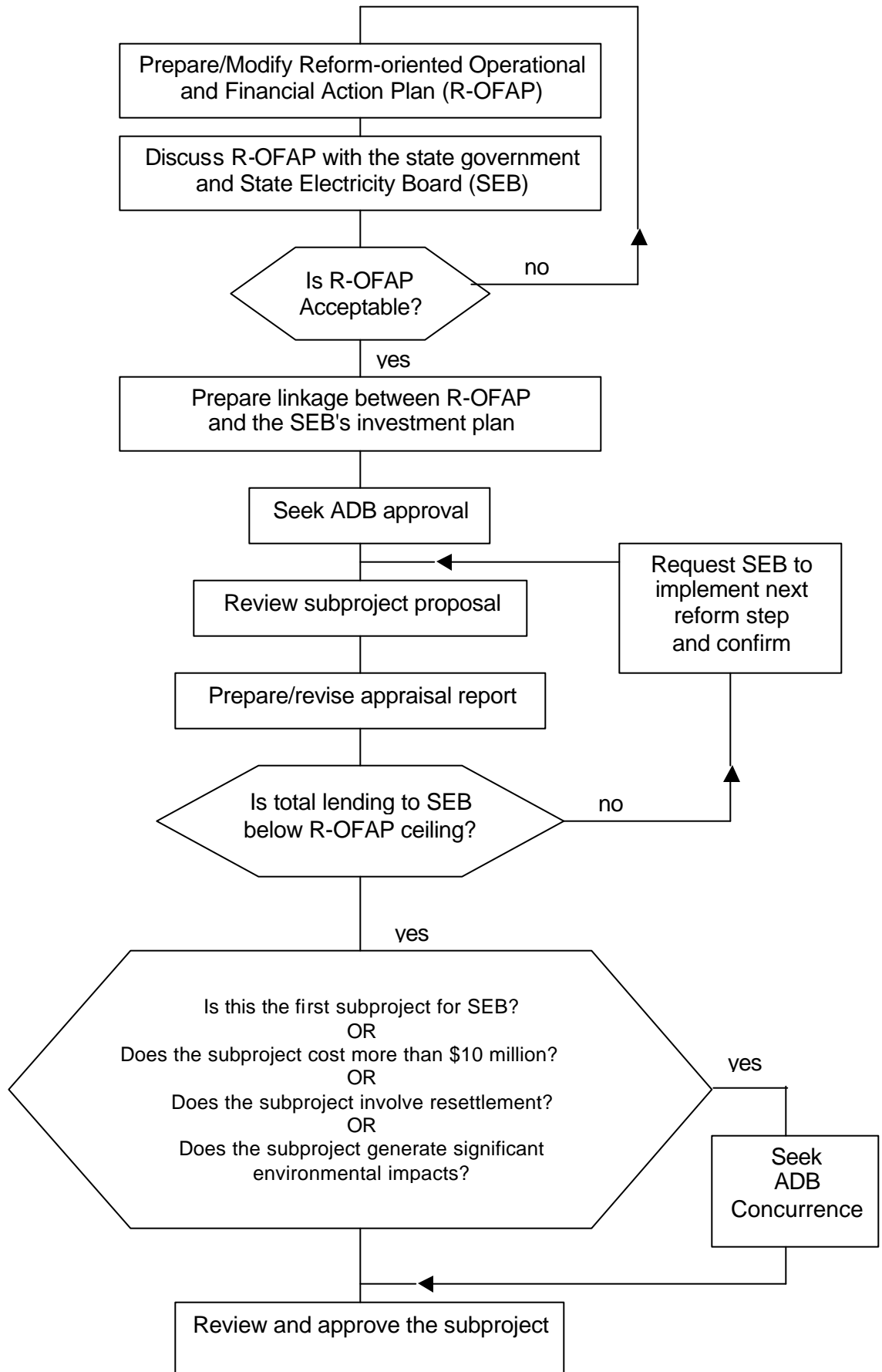
	<u>1997-98</u>	<u>1998-99</u>	<u>1999-00</u>	<u>2000-01</u>	<u>2001-02</u>	<u>2002-03</u>	<u>2003-04</u>	<u>2004-05</u>	<u>2005-06</u>	<u>2006-07</u>	<u>2007-08</u>	<u>2008-09</u>
	(Audited)	(Audited)	(Audited)	(Audited)	(Audited)	(Projected)	(Projected)	(Projected)	(Projected)	(Projected)	(Projected)	(Projected)
I. Income												
Incomes from loans	840	1050	1299	1768	1934	2199	2681	3189	3960	4819	5818	7016
Other incomes	293	358	315	142	164	160	169	203	232	271	314	374
Total	1134	1408	1615	1911	2099	2360	2851	3393	4193	5091	6133	7391
II OPERATING EXPENSES												
Interest & Issue Expenses	541	681	766	1066	1066	1131	1407	1803	2393	3109	3829	4603
Administration Expenses	13	20	28	31	28	34	41	50	62	76	92	110
Depreciation	40	41	41	42	41	30	24	20	16	14	11	9
Other Expenses	5	4	3									
Total	600	746	838	1139	1135	1195	1472	1873	2471	3199	3932	4722
III Profit Before Tax:	535	663	776	772	964	1165	1379	1520	1722	1892	2201	2669
Add/Less Prior Period Adjustments	29	-1	-38	1								
Tax	35	119	116	168	185	233	275	304	344	378	440	533
IV Profit after Tax:	528	543	622	605	779	932	1104	1216	1378	1514	1761	2136
Ratio:												
Return on Equity (Pre-tax)	25.8%	26.7%	26.8%	22.8%	25.3%	26.5%	26.8%	25.2%	24.6%	23.4%	23.6%	24.9%
Return on Equity (Post-tax)	25.5%	21.9%	21.4%	17.9%	20.4%	21.2%	21.5%	20.2%	19.7%	18.7%	18.9%	19.9%
Return on Asset (Pre-tax)	7.4%	7.5%	7.1%	5.8%	6.1%	6.1%	6.1%	5.4%	4.8%	4.4%	4.2%	4.2%
Return on Asset (Post-tax)	7.3%	6.1%	5.7%	4.5%	5.0%	4.9%	4.9%	4.3%	3.9%	3.5%	3.4%	3.4%

SOURCES & APPLICATION OF FUNDS

Rs. in Crores

	<u>1997-98</u>	<u>1998-99</u>	<u>1999-00</u>	<u>2000-01</u>	<u>2001-02</u>	<u>2002-03</u>	<u>2003-04</u>	<u>2004-05</u>	<u>2005-06</u>	<u>2006-07</u>	<u>2007-08</u>	<u>2008-09</u>
	(Audited)	(Audited)	(Audited)	(Audited)	(Audited)	(Projected)	(Projected)	(Projected)	(Projected)	(Projected)	(Projected)	(Projected)
Sources of Funds												
Opening Surplus	602	512	270	297	832	126	926	1063	2091	2425	2871	3560
Net Income After Tax	528	543	622	605	779	932	1104	1216	1378	1514	1761	2136
Depreciation	40	41	41	42	41	30	24	20	16	14	11	9
Loan Collection (Realization)	473	513	993	1416	2007	2391	2044	2942	4049	5314	6736	8362
Market Borrowings	767	1607	1826	2690	3847	4071	1946	6539	5274	6679	11255	13325
Gol Loans	342	249										
ADB Loan							1086	1355	1963	1956	2543	
Interest Subsidy form GOI	200	340	296	298	345							
Net Decrease in WC (except Cash Item)				18								
Total Sources of Funds	2952	3803	4048	5365	7851	7550	7129	13135	14770	17901	25176	27391
Application of Funds												
Disbursements	2076	2467	3404	3230	5150	4600	5200	9500	11000	13000	16000	19000
Debt Repayments	120	922	124	1119	2245	1603	622	1243	1018	1663	5203	3653
Capital Expenditures	32	1	1	2	1	10	10	10	10	10		
Dividends	117	120	138	181	200	186	220	243	275	302	352	427
Net Increase in WC (except Cash Item)	96	24	83	0	130	224	13	48	41	55	60	84
Closing Surplus	512	270	297	832	126	926	1063	2091	2425	2871	3560	4226
Total Application of Funds	2952	3803	4048	5365	7851	7550	7129	13135	14770	17901	25176	27391
Increase / (Decrease) in Cash	-90	-242	27	535	-706	800	137	1027	334	445	690	666
Ratio:												
Debt Service Coverage Ratio	2.4	1.1	2.8	1.4	1.2	1.6	2.3	2.0	2.3	2.1	1.4	1.8

SUBPROJECT APPROVAL PROCEDURE



**POWER FINANCE CORPORATION
IMPLEMENTATION SCHEDULE**

Task Name	2003				2004				2005				2006				2007			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Prepare and approve R-OFAPs																				
Approve subprojects																				
Procurement																				
Subproject implementation																				

Source: Staff Estimates

SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY FORM

A. Linkages to the Country Poverty Analysis

Sector identified as a National Priority in Country Poverty Analysis? Yes	Sector identified as a National Priority in Country Poverty Partnership Agreement? Agreement not yet signed
<p>Contribution of the sector/subsector to reduce poverty</p> <p>The restructuring of the sector in the selected states will result in efficient delivery of services to all consumers. Profitability and efficiency in the farm and nonfarm sector is expected to improve with improvements in quality and reliability of power supply as a result of effective restructuring. For the poor, wage employment opportunities and farm profitability and household welfare will improve.</p>	

B. Poverty Analysis

Proposed Classification

Other. Social impact assessments will be undertaken once the states are approved as eligible subborrowers.
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C. Participation Process

Stakeholder analysis prepared	Yes/No
Participation Strategy	Yes/No
<p>The analysis will be prepared and participation strategy implemented by the partner state electricity boards (SEBs) and state governments of the Power Finance Corporation Limited (PFC) for relevant components such as labor reform. Project interventions are related to power transmission and distribution improvements. Asian Development Bank (ADB) financing will be utilized only for funding equipment and materials.</p>	

D. Potential Issues¹

Item	Significant/ Non-significant/ Uncertain/ None	Strategy to Address Issues	Output Prepared ²
Resettlement ³	Not significant	Under the development finance institution modality, screening procedures are set in place. Short resettlement plans will be prepared prior to award of civil works contracts, to be covenanted under the loan agreements.	Framework prepared
Gender	N/A		Yes/No
Affordability	Not known	To be addressed by the state electricity regulatory commission (SERC) as part of its tariff-setting process, under which public consultations are held.	By state government when SERC rulings confirmed
Labor	Significance unknown	To be addressed by the SEBs	To be addressed by SEB when reform is put in place.
Indigenous Peoples	Not significant	If relevant, will be covered through resettlement plan.	Yes/No
Other Risks/ Vulnerabilities	N/A		Yes/No

RESETTLEMENT FRAMEWORK

1. The subprojects selected for financing will be limited to category B or C projects.¹ To the extent possible, to minimize impacts, the Power Finance Corporation Limited (PFC) and the state electricity boards (SEBs) will select subprojects that acquire (i) government land free of encumbrances and (ii) select land that is purchased on the principle of a “willing buyer/willing seller” and will not entail acquisition through expropriation. PFC will appraise the subprojects in terms of land acquisition and resettlement and will complete screening forms to identify the resettlement impacts for the subprojects to evaluate them. The screening forms have been sent to PFC and are attached to the framework. For transmission lines, either designs should permit cultivation, or land compensation, crop compensation, and compensation for loss of trees will be paid. For nonprotected right-of-way acquisition, crop compensation and compensation for land acquired for transmission towers will be paid. PFC will carry out due diligence to ensure that subproject selection and resettlement plan preparation meet the requirements of the Asian Development Bank (ADB) policy on involuntary resettlement.
2. PFC will ensure that compensation is adequate to replace the lost assets, including livelihood restoration and related assistance. This would include any nontitled persons, sharecroppers, tenants, and wage laborers living or carrying out livelihood activities affected by land acquired. Valuation that is based on compensation under the law allows for a 30% solatium and interest of 12% from the time of gazette notification. Valuation is based on the current year’s price.
3. For each subproject entailing land acquisition and resettlement, PFC will prepare short resettlement plans according to ADB’s *Handbook on Resettlement: A Guide to Good Practice* and ADB’s policy on involuntary resettlement.
4. PFC will work with SEBs to ensure that resettlement plans are prepared in consultation with affected persons and appropriate grievance redress procedures are developed and included in the resettlement plans. Consultation will be conducted by SEB staff and *panchayat* (local government) representatives. The panchayat and SEB project officer in charge will be responsible for grievance redress to ensure that any disagreements are resolved at the village level. The mechanisms will be documented in the resettlement plans. In subprojects where land acquisition is considered to be sensitive, PFC will be involved in the consultation process.
5. An itemized budget with mechanisms for delivery will be included in the resettlement plans. An implementation schedule that clearly indicates resettlement implementation, payment of compensation (at the time of possession of land and assets) will be included in the resettlement plan.
6. PFC will designate staff member(s) within the Externally Aided Projects Unit (EAPU) to be responsible for resettlement, including, preparation of resettlement plans and monitoring and evaluation of resettlement implementation.

¹ Category B projects: Short resettlement plan is required for insignificant resettlement. Resettlement is insignificant when: (i) fewer than 200 people are displaced from housing; (ii) fewer than 200 people will lose fewer than 10% of their productive assets (income generating); or (iii) 500 people or less experience minor impact. When fewer than 100 scheduled tribes (individuals) are affected, a full indigenous peoples’ development plan is not required but impact and mitigation measures can be dealt through the resettlement plan. When it is category C, i.e., no involuntary resettlement effects, no resettlement plan is required.

7. Arrangements for monitoring will be described in the resettlement plan. PFC will forward to ADB monitoring reports on land acquisition and resettlement.

8. PFC has developed procedures for screening subprojects and preparing resettlement plans, in the following formats: (i) triggering actions required by PFC, (ii) initial checklist for resettlement impacts, (iii) screening form for initial social and poverty screening of subprojects, and (iv) compliance memorandum to be signed by head, EAPU. For category C projects, no action is required.

9. Prior to forwarding the resettlement plans to ADB, PFC will ensure that they are disclosed to the public and confirm such to ADB. The mechanisms for disclosure will be discussed in the resettlement plan.

ENVIRONMENTAL REVIEW PROCEDURE FOR APPROVING SUBPROJECTS

1. India's Environmental Assessment Regulations

1. The type of proposed subprojects (e.g., construction of new transmission and distribution lines, new substations and rehabilitation of old substations, and rehabilitation and modernization of existing power stations) is not covered by the Indian Environmental Assessment Regulations. Therefore, approval from the Ministry of Forests and Environment for the environmental impact assessment (EIA) prior to execution of the subproject is not required.

2. Power Finance Corporation's Environmental Assessment and Monitoring Unit

2. In 1998, the Power Finance Corporation (PFC) established procedures for incorporating environmental concerns into project design through its appraisal process. Its Environmental Assessment and Monitoring Unit (EAMU) carries out environmental appraisals for projects funded by PFC and formulates environmental covenants/conditions in its loan agreements if necessary. EAMU is responsible for monitoring environmental performance of the projects through monthly progress reports. If the project executing agency does not meet the loan conditions, PFC, through EAMU, takes necessary action to help the agency meet the environmental loan conditions. However, if the agency does not meet the requirements thereafter, loan disbursements are suspended until the problems are resolved. The EAMU presently has two qualified environment officers with environmental backgrounds. A one-day training workshop to familiarize EAMU staff and PFC's other staff with ADB's *Environment Policy and Environmental Assessment Guidelines* was conducted during the appraisal mission.

3. Environmental Requirements

3. New transmission lines, distribution lines that pass through ecologically sensitive areas, new substations, rehabilitation of existing substations, and rehabilitation and modernization of existing power generation plants that potentially could affect environmental quality will require an initial environmental examination (IEE) prepared in accordance with ADB's environmental guidelines.

4. Review Procedures

4. The following review procedure is adopted to facilitate environmental screening and monitoring:

Proponent/SEB responsibilities:

- Fill up the environmental checklist; and
- Prepare IEE.

PFC (through EAMU) responsibilities:

- Ensure that the proponent/SEB submit environmental checklist for each project;
- Review the filled up checklist;
- Request proponent to prepare IEE;
- Review the IEE report; and
- Participate in the appraisal team and ensure that all necessary environmental conditions are incorporated into the loan document.

ADB responsibilities:

- Review IEE reports for proposed subprojects where the capital cost is more than \$10 million;¹
- Review the IEE for subprojects that have significant environmental impacts; and
- Provide environmental approval and propose related loan conditionalities for PFC to incorporate in its loan documents, within 2 weeks.

5. Public Disclosure

5. In all of these above actions, EAMU is responsible for ensuring that all environmental documentations (environmental checklist, IEE report) are properly kept as part of the loan documentation.

6. All environmental documents are subject to public disclosure; therefore, these documents should be made available to the public if requested.

6. Environmental Due Diligence to Ensure with ADB's Environmental Guidelines and Environment Policy

7. ADB should be given access to undertake environmental due diligence for all subprojects, if needed. However, PFC has the sole responsibility for undertaking environmental due diligence and monitoring the implementation of environmental mitigation measures for all subprojects.

¹ This capital limit will be reviewed 1 year after the Project is effectively implemented.

Environmental Checklist for Classifying Subprojects

Project Title: _____

Note: Project and site descriptions are attached.

Screening Questions	Answer		Remarks
	Yes	No	
<p>A. Project Sitting</p> <p>1. Is the Project area adjacent to or within any of the following ecologically sensitive areas?</p> <ul style="list-style-type: none"> ▪ Sanctuaries ▪ National Park ▪ Reserve areas ▪ Protected Forest <p>2. Does the proposed rehabilitation and maintenance of existing power generation plant will lead to:</p> <ul style="list-style-type: none"> ▪ increasing emission in the form of Suspended Particulate Matter, COx, SOx, or NOx ▪ Increasing ash (bottom ash or fly ash) generation ▪ Increasing wastewater 			<p>Any “yes” answer for these questions, the Project should be classified as a project that has significant impacts</p> <p>For both “yes” and “no” answer, the proponent need to provide detail information on the existing level of waste water, emission and capacity of handling fly-ash and statement whether the operations of the existing power station meet/comply with the Government’s environmental requirements</p>
<p>B. Potential Environmental Impacts</p>			<p>If most of the answers for these questions in B are “no”, the Project does not require initial environmental examination</p>
<p>Will the Project involve the construction of new transmission line more than 25 km</p>			
<p>Will the Project will involve the establishment of new substations or rehabilitation of substation</p>			
<p>Will the Project cause...:</p> <p>Encroachment on historical/cultural areas, disfiguration of landscape ?</p>			
<p>Encroachment on precious ecosystem (e.g., sensitive or protected areas)?</p>			

Screening Questions	Answer		Remarks
	Yes	No	
Alteration of surface water hydrology of waterways crossed by roads and resulting in increased sediment in streams affected by increased soil erosion at the construction site?			
Damage to sensitive coastal/marine habitats by construction of submarine cables?			
Deterioration of surface water quality due to silt runoff, sanitary wastes from worker-based camps and chemicals used in construction?			
Increased local air pollution due to rock crushing, cutting and filling?			
Chemical pollution resulting from chemical clearing of vegetation for construction site?			
Noise and vibration due to blasting and other civil works?			
Social conflicts relating to inconveniences in living conditions where construction interferes with preexisting infrastructures?			
Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?			
Creation of temporary breeding habitats for mosquito vectors of disease?			
Dislocation and compulsory resettlement of people living in right-of-way of the power transmission lines?			
Environmental disturbances associated with the maintenance of lines (e.g., routine control of vegetative height under the lines)?			
Facilitation of access to protected areas in case corridors traverse protected areas?			
Accident risks associated with maintenance of lines and related facilities?			
Health hazards due to electromagnetic fields, land subsidence, lowered groundwater table, and salinization?			

Screening Questions	Answer		Remarks
Disturbances (e.g., noise and chemical pollutants) if herbicides are used to control vegetative height? Generation of scrap metal due to replacement of equipment Generation of scrap of polychlorinated biphenyl (PCB)			

ALL THE INFORMATION ABOVE IS CORRECT.

SUBMITTED BY PROJECT PROPONENT SEB (NAME OF THE STATE):

NAME

POSITION

SIGNATURE AND DATE



AFTER REVIEWING THE ANSWERS ABOVE, THE ENVIRONMENT SPECIALIST OF PFC AGREE THAT THE PROJECT

- Should be categorized as a project that requires IEE
- Should be categorized as a project that requires IEE and potentially have a significant impact
- Should be categorized as a project that does not require IEE

Date and signature

Approved by

Environment Specialist, PFC

Chief/Head Environmental Unit, PFC

**ENVIRONMENTAL SAFEGUARD
COMPLIANCE CHECKLIST**

Project Title	Environmental Classification: <input type="checkbox"/> B with significant impacts <input type="checkbox"/> B <input type="checkbox"/> C	Date Submitted:
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ENVIRONMENTAL ASSESSMENT

	Key environmental Issues (listed)	Satisfactory IEE/SIEE report (Yes or No)	Provision for Implementation of Environmental Mitigation Measures (Yes or No)	Provision for Monitoring the implementation of environmental mitigation (Yes, No, or N/A with Reason)

Comments:

Action Required to Assure Compliance:

Date and Signature of Environment Specialist PFC

Approved By:

Signature of Chief /Head Environmental Unit PFC

SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

A. Introduction

1. The proposed investment components under the Power Finance Corporation Limited (PFC) project will involve the establishment of transmission and distribution lines and substations as well as rehabilitation and modernization of existing power stations. These types of projects are categorized as “B” projects in accordance with the Asian Development Bank (ADB) *Environmental Assessment Requirements*. The initial environmental examinations (IEEs) in accordance with ADB’s *Environmental Assessment Requirements* for two sample investments were prepared by the Executing Agency (EA) and summarized below. This appendix is based on the information in the IEEs for the sample investment components.

B. Description of the Project

2. The sample subprojects represent rehabilitation and expansion of transmission lines and substations, as well as expansion of a distribution system which will involve activities summarized in Table A13.

Table A13. Description of Subproject Activities

No.	Subprojects	Activities
1	Jhargram 132/33V transmission line and substation in West Midnapore District, West Bengal	<ul style="list-style-type: none"> <input type="checkbox"/> The expansion of transmission will include construction of 45 km double circuit 132 transmission line and 149 towers. The physical components will involve construction of transmission line from the existing 132 Midnapr substation to 132/33 switching station at Jargham. <input type="checkbox"/> Installation of transformers, circuit breaker, and lightning arrestors. <input type="checkbox"/> Civil work for establishment of 132/33 substation with total area cover 1200 sq meter
2	Improvement of Distribution System in Aurangabad City, Maharashtra	<ul style="list-style-type: none"> <input type="checkbox"/> Construction of single distribution line, medium and low voltage (33 and 11 kV) <input type="checkbox"/> Installation of 200 kV and 315 kV transformers <input type="checkbox"/> Civil works for establishing 33/11 kV substation <input type="checkbox"/> Construction of 3.7-kilometer (km) low voltage distribution line of 230 volts (V)

C. Description of the Environment

3. The environmental condition of the subproject briefly summarized as follows:

- i. **Jhargram 132/33 kV transmission line and substation in West Midnapore District, West Bengal.** The proposed alignment of the transmission lines will pass through agricultural fields, transverse some small rivers, home gardens, and some settlement areas. The topography of the project area is basically flat with some area having gently slope.

The nearest forest is located about 2 km from the alignment of transmission line in Western Midnapore. The line does not pass through forest, wildlife sanctuary, and national park. It does not pass also any social infrastructures (e.g., schools, medical clinic, and cultural or historical importance). The proposed substation is located in Jhargram subdivision, which is about 170 km from Kolkata. The town is well connected by railway and roads.

- ii. **Aurangabad.** The distribution system will serve the Aurangabad city area. The proposed substations will also located in the city area. There is no environmentally sensitive area nearby this city.

D. Screening of Potential Environmental Impacts and Mitigation Measures

4. The screening of potential impacts identifies that there will be no significant environmental impact arising from the siting of the transmission and distribution lines and the substations, because none of them is located nearby or within any environmentally sensitive area.

5. The environmental impacts associated with the construction stage will be mainly related to land clearing activities and excavation of land to place the tower foundations. The transmission line (132 kV) and medium voltage distribution line (33 kV) will require clearing of a right-of-way across about 10–20 meters (m). No land clearing will be required for low voltage distribution lines (11 kV). Concrete poles of 10–11 m high will be erected at distance not greater than 40–50 m. Each poles will require land of 9–25 square meters. While, the low voltage distribution line (230 V) will not require a special right-of-way, and it does not require also a concrete pole. The poles will be about 8m height and using wood. Therefore, the impacts associated with the laying of the distribution line will be very minimal and the mitigation measures will be manageable. The impacts associated with the construction of the transmission line will also be minimal because the activities will be carried out as much as possible by using the existing motorable roads. If temporary roads are needed, the contractor will be required to employ good construction practices by maintaining the topsoil and rehabilitating temporary roads if the communities living nearby the project area do not want these temporary roads.

6. The environmental impacts associated with the operation would not be significant, because the activities during the operation will involve only maintaining clearance from tree branches and leaves, not exceeding 3 m in height. Noise is the only impact associated with substation operation.

7. The proposed mitigation measures will involve: (i) select a route for alignment to minimize the number of trees to be removed; (ii) avoid cultural and historical monuments, public utility services (e.g., playground, school), and any environmentally sensitive areas; and (iii) locate the transformers at a reasonable distance so that noise levels from the fencing should meet Indian national standards.

8. The following guidelines for transmission lines and tower spotting will be observed:
 - (i) The alignment will avoid, without exception, known wildlife reserves, closed (or old-growth) forests, archaeological sites, religious structures, and educational institutions.
 - (ii) As far as practicable, the alignment will avoid agricultural estates and houses (permanent or temporary). In particular, special care will be taken to avoid human settlement clusters. Where agricultural estates are unavoidable, the ground clearance will be increased to at least 10 m.
 - (iii) Where road or river crossing is unavoidable, prescribed vertical and horizontal clearance requirements will be strictly adhered to.

E. Institutional Requirement and Environmental Monitoring Program

9. The state electricity board will take full responsibility for implementing the environmental management plan and for ensuring that the Project complies with best environmental practices and meets mitigation and monitoring requirements described in the IEE reports. The contractor will take responsibility for implementing all mitigation measures during the construction stage. The PFC will randomly monitor the implementation of the mitigation measures, which include cross-checking the contract and bidding document, if necessary, to ensure that the contractor will be bound by the responsibility to implement the mitigation measures. For the transmission component that passes through any sensitive area, which is subject to government regulations, the state electricity board will ensure that no contract for civil work will be awarded prior to approval from the relevant institutions.

F. Findings and Recommendations

10. Overall environmental impacts are deemed to be minor. Therefore an environmental impact assessment is unnecessary. It is recommended that project implementation should strictly adhere to proposed mitigation measures stated in the IEE reports.

G. Conclusion

11. The adverse environmental impacts of the project will be minor. The IEE is therefore considered adequate.