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INDONESIA

POWER SECTOR THEMATIC OVERVIEW

&

PROJECT PERFORMANCE ASSESSMENT REPORT

SURALAYA THERMAL POWER PROJECT

(LOAN 3501-IND)

SUMATERA AND KALIMANTAN POWER PROJECT

(LOAN 3761-IND)

May 21, 2003

*Sector and Thematic Evaluation Group
Operations Evaluation Department*

Currency Equivalents (annual averages)

Currency Unit = Rupiah (Rp)

1995	US\$1 = Rp. 2249
1996	US\$1 = Rp. 2342
1997	US\$1 = Rp. 2909
1998	US\$1 = Rp. 10,014
1999	US\$1 = Rp. 7855
2000	US\$1 = Rp. 8422
2001	US\$1 = Rp. 10,261

Abbreviations and Acronyms

AAA	Analytical and Advisory Assistance
ADB	Asian Development Bank
APL	Adaptable Program Loan
BAPPENAS	National Development Planning Agency
BOO	Build Own Operate
CAS	Country Assistance Strategy
CEM	Country Economic Memorandum
DGEEU	Directorate-General of Electricity and Energy Utilization
DSM	Demand Side Management
EAP	East-Asia and Pacific
EIRR	Economic Internal Rate of Return
FY	Fiscal Year
GDP	Gross Domestic Product
GOI	Government of Indonesia
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICR	Implementation Completion Report
ID	Institutional Development
IMF	International Monetary Fund
IP	Indonesia Power Company
IPP	Independent Power Producer
JBIC	Japan Bank for International Cooperation
LNG	Liquefied Natural Gas
MBMS	Multi-Buyer/Multi-Seller
MEMR	Ministry of Energy and Mineral Resources
MIGA	Multilateral Investment Guarantee Agency
MME	Ministry of Mines and Energy
MOF	Ministry of Finance
MOP	Memorandum of the President
MOU	Memorandum of Understanding
MW	Mega Watts
OED	Operations Evaluation Department
PCD	Project Concept Document
PERSERO	State-Owned Corporation
PERTAMINA	Perusahaan Tambang Minyak Negara (National Oil and Gas Corporation)
PGN	Perusahaan Gas Negara (National Gas Corporation)
PJB	Java-Bali Generation Company
PLN	Perusahaan Umum Listrik Negara (National Electricity Corporation)
PPA	Power Purchase Agreement

PPAR	Project Performance Assessment Report
SAR	Staff Appraisal Report
SECAL	Sector Adjustment Loan
SIL	Specific Investment Loan
TA	Technical Assistance
TWh	Terawatt-hours (1 billion kilowatt-hours)
UK	United Kingdom
USAID	United States Agency for International Development
USTDA	United States Trade and Development Agency

Fiscal Year

Government: January 1–December 31

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May 21, 2003

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Performance Assessment Report on the Indonesia Suralaya Thermal Power Project (Ln. 3501-IND) and Sumatera and Kalimantan Power Project (Ln. 3761-IND), and Power Sector Thematic Overview

Attached is the Performance Assessment Report prepared by the Operations Evaluation Department on the above projects accompanied by a thematic overview of the power sector in Indonesia. The loan of US\$423.6 million for the Suralaya Thermal Power Project was approved in FY92 and closed in FY00. It was cofinanced by the Asian Development Bank, which provided a loan of US\$350 million for the project. The Sumatera and Kalimantan Power Project was approved in FY94 and closed in FY01. The Bank loan for US\$260.5 million was accompanied by cofinancing of about US\$57 million equivalent from JBIC.

The objectives of the Suralaya Thermal Power Project were to (a) expand the national power utility's (PLN) generating capacity in Java, (b) promote the economic use of coal for electricity generation, (c) develop PLN's institutional capacity to operate and maintain thermal power plants, and (d) strengthen PLN's financial capability.

The project fully met its two most important objectives (a and b above) and partially met the third. There was no progress in strengthening PLN's finances; rather the contrary occurred, the utility plunged into a severe financial crisis following the massive currency devaluation of 1997-98.

Despite PLN's ongoing financial weakness, the Suralaya Thermal Power Project has had a *moderately satisfactory* overall outcome, because of the successful and timely implementation and satisfactory operation of the newly commissioned units of the Suralaya plant. However, the likelihood of continuing financial difficulties in the medium term jeopardizes project sustainability, which is therefore assessed as *unlikely*. Institutional development impact was *modest*. Bank and borrower performance during the project are rated as *satisfactory*.

The main objective of the Sumatera and Kalimantan Power Project was to support the government's long-term policy reform agenda for the power sector while providing financing for expansion of PLN's generation and transmission capacity in Sumatera and Kalimantan. The two major physical investments undertaken by the project were the Besai 90 MW hydro powerplant in South Sumatera and the 130 MW Banjarmasin coal-fired plant in South Kalimantan.

The physical investments funded by the project were completed satisfactorily, but the Besai plant has had unresolved technical problems since commissioning. The project outcome is rated as *unsatisfactory* because it did not meet its policy objectives of sectoral restructuring and improved financial performance. Sustainability is assessed as *unlikely*. The institutional development impact of the project is rated as *substantial*, because of its contribution to improving environmental management capabilities in both the coal and power sectors. Bank performance was *satisfactory* but only marginally, because of the project's unsatisfactory quality at entry. Borrower performance is rated as *unsatisfactory*.

The **Thematic Overview** of the sector found that the cost to GOI of keeping PLN afloat during the past 5 years has been massive—over US\$4 billion—but PLN is still technically insolvent. The drain on the budget has not yet been halted, and further assistance from GOI is likely to be required in the near term. The political constraints on GOI that prevent it from moving faster on tariff increases, thereby delaying PLN's return to solvency, are also hindering sector reforms and the future development of the sector. There is virtually no scope for attracting private investment or raising long-term finance for the sector until PLN is able to break even financially.

Among the GOI policy goals for the power sector as spelt out in 1993 were: to (a) improve the performance of PLN through decentralization, commercialization, and corporatization, and (b) reform the regulatory and institutional framework to foster competition and facilitate increased private sector participation. A decade later, progress toward these goals has been modest and the fundamental objective of building an efficient and financially viable power sector in Indonesia is far from achieved.

While work on the unbundling of PLN continues, and is in line with the broader political trend toward greater decentralization in Indonesia, privatization of the constituent parts of PLN is controversial and viewed with suspicion by large sections of the public. In part, this reflects lack of confidence among Indonesians that the State is capable of carrying out a clean and transparent privatization transaction. The present government has shown little indication that PLN's privatization is part of its reform agenda. It seems highly likely that PLN and its subsidiaries will remain entirely in public hands for the next few years.

Indonesia's IPP program of the 1990s had few redeeming features. GOI committed virtually all the avoidable errors possible despite repeated advice against taking unsound actions. The negative effect of these errors was then compounded by the macroeconomic upheavals of 1997–98. The Indonesian taxpayer and electricity consumer will have to bear the cost of these decisions for many years to come. The Bank's advice to GOI on the conduct of its IPP program was timely, unambiguous and irreproachable. Regrettably, the Bank's influence in the sector during the mid-1990s waned, and much of the Bank's advice went unheeded.

PLN needs to bring the renegotiation of PPAs with existing IPPs to a rapid close to pave the way for attracting additional IPP capacity in the medium term. Almost five years have elapsed since the GOI decision to reexamine the contractual arrangements with IPPs. The prolonged uncertainty is also harmful for new investor sentiment well beyond the power sector.

PLN faces a looming shortage of generation capacity in its Java-Bali system, which could lead to peak load shedding as soon as 2004. Rising demand, driven by economic recovery, low tariffs, and new residential consumer connections, has wiped out PLN's generation reserve margin.

The findings of the Thematic Overview suggest that the radically changed circumstances in the Indonesian power sector, combined with the drying up of foreign investment interest in IPPs in developing countries in general mean that the Bank's continuing reluctance to support new generation projects may have to be reconsidered. The Bank could join forces with PLN's other main lenders to structure a new generation project that would also bring in private partners. Alternative ways of structuring mixed public-private generation projects need to be explored. The Bank can play its most useful role in assisting PLN to find a way out of its current impasse on future new generation capacity.

Attachment



About this Report

The Operations Evaluation Department assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, OED annually assesses about 25 percent of the Bank's lending operations. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons. The projects, topics, and analytical approaches selected for assessment support larger evaluation studies.

A Project Performance Assessment Report (PPAR) is based on a review of the Implementation Completion Report (a self-evaluation by the responsible Bank department) and fieldwork conducted by OED. To prepare PPARs, OED staff examine project files and other documents, interview operational staff, and in most cases visit the borrowing country for onsite discussions with project staff and beneficiaries. The PPAR thereby seeks to validate and augment the information provided in the ICR, as well as examine issues of special interest to broader OED studies.

Each PPAR is subject to a peer review process and OED management approval. Once cleared internally, the PPAR is reviewed by the responsible Bank department and amended as necessary. The completed PPAR is then sent to the borrower for review; the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

About the OED Rating System

The time-tested evaluation methods used by OED are suited to the broad range of the World Bank's work. The methods offer both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. OED evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (more information is available on the OED website: <http://worldbank.org/oed/eta-mainpage.html>).

Relevance of Objectives: The extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). *Possible ratings:* High, Substantial, Modest, Negligible.

Efficacy: The extent to which the project's objectives were achieved, or expected to be achieved, taking into account their relative importance. *Possible ratings:* High, Substantial, Modest, Negligible.

Efficiency: The extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. *Possible ratings:* High, Substantial, Modest, Negligible. This rating is not generally applied to adjustment operations.

Sustainability: The resilience to risk of net benefits flows over time. *Possible ratings:* Highly Likely, Likely, Unlikely, Highly Unlikely, Not Evaluable.

Institutional Development Impact: The extent to which a project improves the ability of a country or region to make more efficient, equitable and sustainable use of its human, financial, and natural resources through: (a) better definition, stability, transparency, enforceability, and predictability of institutional arrangements and/or (b) better alignment of the mission and capacity of an organization with its mandate, which derives from these institutional arrangements. Institutional Development Impact includes both intended and unintended effects of a project. *Possible ratings:* High, Substantial, Modest, Negligible.

Outcome: The extent to which the project's major relevant objectives were achieved, or are expected to be achieved, efficiently. *Possible ratings:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Bank Performance: The extent to which services provided by the Bank ensured quality at entry and supported implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of the project). *Possible ratings:* Highly Satisfactory, Satisfactory, Unsatisfactory, Highly Unsatisfactory.

Borrower Performance: The extent to which the borrower assumed ownership and responsibility to ensure quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development objectives and sustainability. *Possible ratings:* Highly Satisfactory, Satisfactory, Unsatisfactory, Highly Unsatisfactory.

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This report was prepared by Sunil Mathrani, OEDST, Consultant, who assessed the project in June 2002. Fernando Manibog is the Task Manager. The report was edited by William Hurlbut, and Tomas Caspellan provided administrative support.

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Principal Ratings

SURALAYA THERMAL POWER PROJECT (Ln. 3501-IND)

	<i>ICR*</i>	<i>ES*</i>	<i>PPAR</i>
Outcome	Unsatisfactory	Marginally unsatisfactory	Moderately satisfactory
Sustainability	Unlikely	Uncertain	Unlikely
Institutional Development Impact	Substantial	Substantial	Modest
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Satisfactory	Satisfactory	Satisfactory

SUMATERA AND KALIMANTAN POWER PROJECT (Ln. 3761-IND)

	<i>ICR*</i>	<i>ES*</i>	<i>PPAR</i>
Outcome	Unsatisfactory	Unsatisfactory	Unsatisfactory
Sustainability	Unlikely	Unlikely	Unlikely
Institutional Development Impact	Modest	Modest	Substantial
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Satisfactory	Unsatisfactory	Unsatisfactory

* The Implementation Completion Report (ICR) is a self-evaluation by the responsible operational division of the Bank. The Evaluation Summary (ES) is an intermediate OED product that seeks to independently verify the findings of the ICR.

Key Staff Responsible

SURALAYA THERMAL POWER PROJECT (Ln. 3501-IND)

<i>Project</i>	<i>Task Manager/Leader</i>	<i>Division Chief/ Sector Director</i>	<i>Country Director</i>
Appraisal	V. Thakor	P. Scherer	M. Haug
Mid-term	M. Mitra	P. Scherer	M. Haug
Completion	K. Schenk	Y. Sumi	M. Baird

SUMATERA AND KALIMANTAN POWER PROJECT (Ln. 3761-IND)

<i>Project</i>	<i>Task Manager/Leader</i>	<i>Division Chief/ Sector Director</i>	<i>Country Director</i>
Appraisal	M. Mitra	P. Scherer	M. Haug
Mid-term	K. Schenk	Y. Sumi	M. Baird
Completion	K. Schenk	M. Farhandi	M. Baird

Preface

This is a thematic overview of the Indonesian power sector and a Project Performance Assessment Report (PPAR) on the Suralaya Thermal Power and the Sumatera and Kalimantan Power projects. The former project was partly funded by a loan of US\$423.6 million (Ln. 3501-IND), approved in June 1992 and closed on schedule in September 1999. A loan of US\$260.5 million (Ln. 3761-IND), approved in June 1994, supported the Sumatera and Kalimantan Power Project, for which the original closing date of December 31, 2000 was extended until June 30, 2001. The thematic overview takes stock of the main issues in the Indonesian power sector today, reviews the Bank's role and presents possible alternatives for new directions in Bank involvement in the sector. It does not purport to be a comprehensive evaluation of the sector or of the Bank's assistance to it.

This report is based on the Implementation Completion Reports (ICRs) prepared by the East Asia and Pacific Region (Report no. 20637 dated June 21, 2000, and Report no.22742, of December 7, 2001), the appraisal documents (Report no. 10550, June 3, 1992 and Report no. 12662, May 27 1994) loan documents, project files and discussions with Bank staff. An Operations Evaluation Department (OED) mission visited Indonesia in June 2002 to discuss the effectiveness of the Bank's assistance with the government and the project implementing agency. The collaboration and assistance of all their officials are gratefully acknowledged.

This study and PPAR is the first OED review of Bank operations in Indonesia's power sector since 1995. It was undertaken at the request of the East Asia Region to provide an independent view of the Bank's interventions in the sector during the 1990s. It aims to assist the EAP Region in the formulation of a lending strategy after an extended period without new Bank loans for power projects.

Following standard OED procedures, the draft of this PPAR was sent to the borrower and cofinanciers for comments before finalization. No comments were received.

Part I. Power Sector Thematic Overview

MACROECONOMIC CONTEXT

1. Indonesia has a population of more than 210 million, over half of whom live on Java. GDP in 2001 was about US\$144 billion. In the 30 years before the Asian economic crisis of 1997, the economy had averaged nearly 7 percent annual real growth. Real GDP fell by 15 percent in 1998, the proportion of people below the poverty line doubled, and unemployment rose sharply. In less than three months, the Rupiah lost 75 percent of its value with respect to the dollar. Despite moderate growth in 2000–01, GDP has not yet recovered to its 1997 level. Five percent growth is needed to prevent unemployment from rising, but is not expected to be achieved in the near term.

2. Total foreign debt at end-2001 was about US\$140 billion, nearly half of which was publicly contracted. Servicing public debt¹ accounted for 40 percent of government revenues in 2001 and was placing great strain on GOI's budget. Funds for development spending have shrunk dramatically in real terms as interest payments, subsidies and salaries absorb about 80 percent of government revenue. Inflation is still high² and the exchange rate weak. Political and legal uncertainty and poor corporate governance have had a damaging effect on foreign direct investment, which continues to fall. Following the banking collapse that accompanied the macroeconomic crisis, about 70 percent of bank deposits have come to be controlled by the state.

SECTORAL BACKGROUND

3. Oil production (about 1.3 million barrels per day) and natural gas account (3 billion cubic feet) for about a quarter of Indonesia's exports and of government revenues, but represent a much smaller share (11 percent) of GDP. Nearly two-thirds of oil production is consumed within the country while the bulk of the gas production is exported in the form of LNG. Gas exports are much more important financially³ to Indonesia's trade balance than oil, although the latter contributes three times as much revenue to the government as gas. Domestic petroleum product prices, with the exception of kerosene, are currently at about 75 percent of world levels. Subsidies on petroleum products in 2001 were over US\$7 billion and were the largest single expenditure item for GOI after debt service.

4. The electrification of Indonesia is one of its most impressive economic successes of the past 30 years. Nationally over 80 percent of villages are electrified, although there are marked regional disparities: in Java the proportion is close to 100 percent. However, household electrification, at 52 percent, is much lower. Even on Java-Bali under 60 percent of households are electrified. The integrated national power utility, PLN, has a generation capacity of about 23,000 MW, while there is a further 15,000 MW of captive generation capacity in private hands, about half of which is located off Java. Presently, commissioned IPP generation capacity is slightly above 3000 MW, three-quarters of which is on a single site in East Java (Paiton).

5. PLN's electricity sales increased at an annual average rate of over 15 percent since the early 1970s. It had just over a million customers in 1975, while today it has nearly 30 million clients, more than 50,000 employees, and sales of more than 80 TWh, making it one of the world's largest

1. Total public debt (domestic & foreign) is equivalent to nearly 90 percent of GDP. Over \$ 30 billion of foreign debt is owed to multilateral lenders.

2. The CPI rose by nearly 13 percent in 2001.

3. In dollar terms, gas exports in 2000 were more than double the value of oil exports.

integrated power utilities. Even after the onset of the 1997 economic crisis it continued to connect new consumers at the rate of over 1 million annually.⁴

6. The first steps toward greater decentralization were taken in 1995 when PLN split its Java-Bali generation activity into two subsidiaries, Indonesia Power Co. (IP), with about 9000 MW installed capacity and the Java-Bali Generation Co. (PJB) with 6500 MW. Until the macroeconomic crisis, consideration was being given to partial privatization of these firms, but this was shelved.

7. Further institutional reforms of a more wide-reaching nature were mooted in mid-1998 when GOI issued a power sector restructuring policy. The policy paper envisaged both the geographical as well as functional unbundling of PLN, the creation of an independent regulator, and a five-year transition to a competitive wholesale electricity market with multiple buyers and sellers (i.e., by 2003). These reforms have yet to be implemented, because of long delays in obtaining Parliamentary passage of a new electricity law, which was finally approved in September 2002 (paras. 21–22).

PLN'S FINANCES

8. PLN was particularly badly hit by the macroeconomic crisis. Its debt service increased massively and all its other costs rose far more rapidly than the rate at which it could raise its tariffs. Losses continue to mount as tariffs still do not cover operating costs, despite a doubling of the average level of tariffs in Rupiah terms since 1997. In 2001 its operating loss was about US\$300 million because the average cost of power sold was Rp. 380/kWh while its average revenue was only Rp. 336/kWh, equivalent to about US\$3.5/kWh. However, this estimate of the cost of supply substantially understates the true cost of power because it is based on subsidized fuel costs, under payment of purchased power obligations, and depreciation based on a rate base valued in Rupiah-terms at pre-crisis levels.

9. GOI has agreed in principle to raise tariffs progressively to reach the pre-crisis level of US\$7/kWh by 2005, which would entail a further doubling of average tariffs, *provided* the Rupiah does not depreciate further. The approved tariff increase for 2002 was 6 percent per quarter and this has been extended to 2003. The average tariff had risen to Rp 480/kWh (US\$5.4/kWh) by the end of 2002, which is above the cost of power purchased from IPPs. More substantial increases may be required in 2003–04, but will be politically hard to approve as elections approach⁵. Even at the equivalent of US\$7/kWh, PLN would require subsidies from GOI to cover its unviable rural electrification programs.

10. Meanwhile, PLN's costs continue to rise sharply as fuel subsidies are phased out by 2004. In 2001 it paid only half the full cost of its oil. This year it is expected to pay 75 percent of the international crude price. Its purchases of power from IPPs are also increasing as demand continues to rise. Unpaid arrears to IPPs for power purchases already amount to about US\$2 billion.⁶ Looking ahead, it faces huge long-term foreign currency denominated liabilities for power purchases from IPPs.

11. The cost to GOI of keeping PLN afloat since 1997 has been massive. During 1998–2000 PLN stopped making debt service payments on loans onlent to it by GOI⁷. About US\$900 million had to

4. PLN's customer base expanded by 5.2 million in the four-year period 1998–2001.

5. Discounts for industrial users were announced in January 2003, following public protests against the increases.

6. Current bills for power purchases are settled at the pre-crisis exchange rate, pending final resolution of contractual disputes with IPPs.

7. Although it met its obligations to domestic banks and bondholders.

be provided to it in cash subsidies, US\$3 billion of overdue interest on loans was converted to equity and US\$500 million of unpaid principal has been rescheduled as new debt. Despite these rescue measures by GOI, PLN is still technically insolvent. The drain on the budget has not yet been halted and further assistance from GOI is likely to be required in the near term.

12. The political constraints on GOI that prevent it from moving faster on tariff increases, thereby delaying PLN's return to solvency, are also hindering sector reforms and the future development of the sector. There is virtually no scope for attracting private investment or raising long-term finance for the sector until PLN is able to break even financially.

INSTITUTIONAL REFORMS OF THE POWER SECTOR

13. Among the GOI policy goals for the power sector as spelt out in 1993 in the context of the sixth five-year development plan were the following: to (a) improve the performance of PLN through decentralization, commercialization and corporatization, and (b) reform the regulatory and institutional framework so as to foster competition and facilitate increased private sector participation. A decade later, progress toward these goals has been modest at best.

14. As a first step, GOI converted PLN into a Persero (state-owned corporation) in 1994. The two generation subsidiaries on Java-Bali were then legally established in 1995, around the time of the appraisal of the Bank's last loan to PLN. The Bank's vision⁸ of the long-term future of the power sector was for a gradual *functional* unbundling of PLN's Java-Bali system, but a *geographical* breakup along regional (Wilayah) lines for the rest of Indonesia. Ultimately, "the end-product of PLN restructuring would be a group of limited liability companies, with private participation in their ownership."⁹ Private participation in the generation subsidiaries was envisaged in the form of an initial public offering of shares, slated for 1997, but which never occurred, due to the onset of the macroeconomic crisis. Two major Bank-funded studies on regulation and private power were completed in late 1996. They also examined options for the future sector structure and recommended the adoption of a single buyer market for a 5–10 year period. No GOI commitment to implement the recommendations of the studies was possible due to forthcoming elections in 1997.

15. In mid-1997, just as the macroeconomic crisis was unfolding, the ADB floated a new proposal for a profound institutional shakeup of the power sector—a rapid move to a competitive power generation market for Java-Bali with multiple buyers and sellers (hereafter MBMS) and with IPPs operating as merchant power plants. The ADB offered to assist GOI with this transformation through a program loan. The ADB's Energy Department Director wrote to the World Bank's Country Director for Indonesia seeking support for this approach. However, the Bank in its reply¹⁰ indicated that it preferred to begin with a transitional "single buyer" phase before a move to a MBMS market. Internal Bank correspondence indicates that staff had deep reservations about the ADB's proposals and correctly argued that without a financial recovery of PLN, restructuring and privatization would become moot.¹¹

16. These issues were temporarily sidelined by the Rupiah currency crisis in late 1997 that destroyed PLN's already fragile finances. However, they were given prominence by the post-Suharto

8. It is unclear to what extent this was also the vision of GOI.

9. Para. 3.2 of the SAR for the 2nd Transmission Project, Report no. 15048, January 1996.

10. Letter from D. De Tray, Country Director, Indonesia, to P. Dickie, Director, ADB, 9/17/97.

11. ADB continued to oppose the single buyer phase being included in the GOI Policy Paper, as did some Bank's energy advisory staff, who saw transforming Indonesia à la the Victorian power pool to be the only solution.

(Habibie) government that took office in May 1998. With unprecedented speed, the MME issued a path-breaking power sector restructuring policy in August 1998.

17. The policy paper states that GOI seeks “a world-class power sector able to provide high-quality, reliable service with increasing levels of efficiency.”¹² The objectives of the restructuring policy were stated to be the restoration of financial viability, competition, transparency, and more efficient private sector participation. PLN’s Java-Bali system was to be unbundled into separate transmission and distribution companies while the two existing generation subsidiaries were to be further split up. Private participation in all these unbundled companies through share offerings was envisaged once PLN’s financial viability had been restored.

18. The rest of PLN’s system outside Java-Bali was to remain a single integrated entity in state hands. In addition, an independent regulator would be set up along with a separate fund to handle GOI subsidies to commercially unviable electrification programs. A five-year transition to a competitive MBMS market (i.e., by 2003) was envisaged. The policy paper glossed over the difficulty of dealing with the market rigidities arising from the large amount of high-cost power from IPPs that would have to be placed with distributors. It was released to the public and formalized as GOI policy in December 1998.

19. World Bank and ADB staff were closely involved in the drafting of this policy, which built on work done in the previous five years by teams of Bank-funded international consultants (para. 14). With hindsight it is possible to say that the policy paper would have benefited from more deliberation among a wider range of stakeholders before its release, although it was subject to limited external comment and discussion through a series of consultations with key invited stakeholders¹³. Experience in many countries has repeatedly shown the need for building broader public support for power sector reforms. In addition, the Bank should probably have been less closely implicated in drafting it. The driving force for the policy statement was the minister himself, with whom Bank staff had a good rapport. There was insufficient consultation among stakeholders because the minister opposed a participatory approach¹⁴, perceiving there to be a very limited window of opportunity for reform.

20. The formal adoption of the policy paper by GOI was instrumental in paving the way for the ADB’s March 1999 \$380 million program loan¹⁵, whose disbursement was linked to an ambitious schedule for implementing the institutional reforms. The 1998 restructuring policy was then used as the basis for drafting a new electricity law, which had been expected to be enacted by early 2000. GOI also gave explicit commitments to the IMF on power sector reforms in its 1999 Letter of Intent, based on the 1998 policy statement.

12. Para. 13, Power Sector Restructuring Policy, MME, August 1998.

13 ‘Power Politics’, N.Dubash (ed.), published by World Resources Institute, 2002, points out in Ch. 5 that ‘Despite the exclusive appearance of “by-invitation” breakfasts with the minister, these meetings were among the first attempts to open up participation in electricity sector decision making.’

14. The Region pointed out that no amount of public consultations would have satisfied the most vociferous critics of the White Paper, who interpret the Constitution as requiring the State to provide electricity as a basic need of the people.

15. A further \$20 million TA loan was also provided for various capacity building and consulting services related to the establishment of a competitive electricity market. However, GOI has been reluctant to avail itself of the TA facility, which has slowed progress on sectoral reform. JBIC also provided \$400 million of cofinancing.

21. However, the reform process soon lost momentum with the departure of the Minister of Energy,¹⁶ who had been instrumental in devising the 1998 policy, and because of the political instability that characterized the Wahid Presidency. Slow progress with IPP renegotiations and resistance to tariff increases were also obstacles to the reform agenda. The draft electricity law was subject to multiple revisions within GOI during a two-year period, before being sent to Parliament for debate in 2001, reflecting differing views¹⁷ on the overall objectives of the reform as well as the influence of vested interests favoring the status quo. In the absence of the new law, no structural modifications could take place. PLN was not proactive in the pursuit of greater decentralization, such as by setting up other subsidiary companies within the existing legal framework. Nor has an independent regulator been set up, although a “shadow” regulator is operating within the ministry¹⁸.

22. Parliamentary approval of the bill was obtained in early September 2002. The new law abolished PLN’s monopoly over distribution and its role as the single buyer of all power produced by private generators. It permits producers to sell directly to consumers under certain conditions. However, ownership of both the transmission and distribution networks will remain in state hands, but with open access allowed to all entrants who qualify for an electricity business license. A regulatory agency is to be set up within a year of the law’s passage. Uniform national electricity prices are also to be abolished and in future Provincial governments will be able to set tariffs for new consumers not connected to the national grid. A long (five year) phase in period was adopted for the introduction of the reforms, at the end of which GOI is to have designated at least one area for competition. The law stipulates a lengthy list of pre-conditions which have to be met prior to market opening, including the removal of subsidies on primary fuels and full cost recovery electricity tariffs. The passage of the law is important as a useful statement of principles that eliminates the prolonged uncertainty surrounding the direction of institutional reforms for the sector. Unsurprisingly, it leaves many practical details to be defined in subsidiary texts, which have yet to be issued.

23. Despite the passage of electricity law, the window of opportunity for far-reaching reforms in the wake of the overthrow of the Suharto regime has partially shut. While work on the unbundling of PLN continues,¹⁹ and is in line with the broader political trend toward greater decentralization in Indonesia, privatization of the constituent parts of PLN is controversial and viewed with suspicion by large sections of the public. Some see privatization of PLN as incompatible with the Constitution. Others feel that the private sector is inherently crooked and that GOI is incapable of regulating it competently and transparently. Many do not believe that the State is capable of carrying out a clean and transparent privatization transaction and memories of the IPP deals are still fresh in the public mind. Public resistance to tariff increases remains high, with some viewing them as rewarding inefficiency and bailing out high-cost IPPs at the expense of consumers. Without evidence of genuine burden sharing by the IPPs, it will be impossible for GOI to refute this strand of opinion. There is also considerable discontent with the poor service from PLN outside the Java-Bali grid, which adds to the difficulty of raising tariffs. Finally, the growing tightness of supply in the Java-Bali system makes competition between generators impossible to envisage until a reasonable generation reserve margin is built up once again. All of these factors make it hard to move quickly toward even a partial

16. The Bank’s close association with the minister was risky and may have hurt its credibility. A more arm’s-length relationship and a greater push for broader stakeholder consultation might have proved more effective in the long run. (The Region disagrees with this assertion and pointed out that there has been relatively little criticism of the Bank on this issue.)

17. For some in government the goal was greater efficiency and better sector performance; others saw maximization of privatization receipts as primary.

18. The Region pointed out that under the old electricity law it was not possible to set up an independent regulator because the law clearly assigned regulatory authority to the Minister and to the President (on tariffs).

19. Most initial reservations about its merits, particularly within PLN appear to have been overcome, although opposition to the breakup of the generation subsidiaries is still evident among their staff.

privatization of PLN. However, the present government has shown little indication that such a step is part of its reform agenda. It seems highly likely that PLN and its subsidiaries will remain entirely in public hands for the next five years.

PRIVATE POWER GENERATION

24. Indonesia's IPP program of the 1990s had few redeeming features. The GOI committed virtually all the avoidable errors possible despite repeated advice (including from the Bank) against taking unsound actions. The negative effect of these errors was then compounded by the macroeconomic upheavals of 1997–98. The Indonesian taxpayer and electricity consumer will have to bear the cost of these decisions for many years to come.

25. In summary, the avoidable errors were:

- Too much capacity (11,000 MW)²⁰ was contracted in too short a space of time, even in the absence of the economic downturn;
- No competition took place in selecting bidders²¹ and in numerous cases capital costs were inflated,²² with inevitable consequences for the tariff;²³
- All developers were granted quasi-sovereign guarantees by GOI of offtake and payment obligations by PLN;
- Too much baseload²⁴ rather than peaking plant was built;
- Fuel choices and plant locations²⁵ were suboptimal;
- Transmission links were not commissioned in time, forcing PLN to back down its own plant in order to dispatch IPP production.²⁶

26. The Bank's policy advice to GOI on its private power policy and on the conduct of its IPP program was unambiguous and irreproachable. Furthermore, with the exception of political risk insurance for two projects provided by MIGA, the Bank Group as a whole has desisted from any direct participation in Indonesian IPPs. Regrettably, the Bank's influence in the sector during the key period (1992–97) waned considerably due to the greater financial weight of IPP sponsors and their close connections with politically well-connected local business interests. Hence, much of the Bank's advice went unheeded. When the crisis first hit, the Bank mobilized world-class experts to provide training to PLN and GOI on how to structure the renegotiations of the IPP program. However, thereafter both GOI and the Bank felt that it would be counterproductive to involve the Bank either as

20. Peak demand nationwide was less than 13,000 MW when the program was halted in 1997.

21. One exception that proved the rule was the Tanjung Jati A plant, where ICB was used and low bids were received.

22. For example, the Bank-funded Paiton 2 X 400 MW coal plant procured under ICB cost about 35 percent less on a per kilowatt basis than the private Paiton 2 X 600 MW coal plant built concurrently on an adjacent site. Critics point out that high initial project development costs (bank and legal fees, etc.) and a higher return on investment for a private project, would seem to account for only part of the cost difference between these two projects.

23. After the signing of the first Paiton coal-fired IPP, US\$7.5/kWh became the norm for the many subsequent proposals that were negotiated, regardless of their real costs. This also lends support to the view that the private Paiton plant was overpriced.

24. Due to the lack of additional gas supply on Java, there was a strong bias toward coal and geothermal plants, both of which are used for baseload generation.

25. Too much capacity was built in East Java, necessitating investment in costly 500 kV transmission lines to bring the power to West Java.

26. This problem is still not resolved. The unfinished 500 kV southern loop in Java prevents all the potential production in east Java from being transmitted to the west.

an arbiter or financier of legal expertise because of public perceptions that the Bank was not impartial when it came to balancing Indonesia's interests with those of big business. As a result, the Bank steered clear of any involvement in post-crisis attempts to resolve the differences between GOI and the IPPs, even though considerable expertise had been built up within the Bank²⁷ on these issues. In recent years the Bank's advice to GOI to rapidly conclude IPP disputes has also had little effect.

27. Right from the start, when the GOI policy on private power was being formulated in 1992, the Bank warned GOI of the risks associated with guaranteeing the terms of PPAs and of the drawbacks of accepting unsolicited project proposals. In late 1994, the Bank provided GOI with an analysis of the financial implications of the PPAs signed or being negotiated at that time.²⁸ The rough estimate of the Bank was that the additional cost being incurred by Indonesia was about US\$800 million per year. The Bank went on to warn GOI of the likely impact this would have on electricity tariffs.²⁹ This letter was leaked to the press, but GOI continued regardless.

28. In 1995, the Bank again attempted to highlight the issue by giving it prominent coverage in the CEM,³⁰ which states "If demand growth is less than the high projected rates, then the take-or-pay contracts will force PLN to buy from the private plants while reducing generation from its lower cost hydroelectric and coal operations as has occurred in the Philippines." The report went on to point out that, "some take-or-pay PPAs also appear to be high and front loaded, compared to recent agreements in the Philippines and Thailand." It also warned that, "any increase in over-capacity and any PPAs above PLN's generation cost would translate into higher costs for PLN in the late 1990s. This, in turn, would require a politically unpopular jump in power tariffs, or a substantial Government subsidy to avoid the jump. Related concerns over PLN's obligations could complicate financing for the private projects and PLN's privatization." Finally, the CEM recommended, "The Government should defer signing of any new PPAs or initiation of any new PLN plants until appropriate. The Government should avoid enhancing PPAs, especially government guarantees of private debt." The subsequent turn of events unfortunately demonstrated the correctness of the Bank's analysis and wisdom of its unheeded advice.

29. The Bank then attempted to exert further pressure by means of conditionality attached to the 1996 Second Power Transmission Loan.³¹ GOI was obligated to develop rules and procedures for private participation in power generation in a form acceptable to the Bank as well as to reduce PLN's generation reserve margin for the Java-Bali grid. Both of these loan covenants proved to be unenforceable.³²

30. In the deal-making atmosphere³³ that prevailed in Indonesia in the mid-1990s, it is unlikely that a loan suspension by the Bank on this issue would have had any impact on events either, although the upholding of good governance principles would have behooved such a move. However, in the face of extreme pressure from Suharto family members, even the clear danger signals from the initial drop in the value of the Rupiah in July–August 1997 were insufficient to prevent the PPA for the

27. From the Pakistan IPPs.

28. Fax from P. Scherer, Chief, Industry & Energy Operations Division, to Dr. Arismunandar, Department of Mines & Energy, GOI, November 10, 1994, with copies to MOF and BAPPENAS.

29. "Locking in costly excess capacity and high tariffs through binding contractual commitments inevitably would require very substantial tariff increases in the medium term which, in turn, would impact negatively on Indonesia's competitiveness and cause adverse consumer reactions."

30. Box 3.1 in *Improving efficiency and equity—Changes in the Public Sector's role*, Report no. # 14006, July 1995.

31. Ln. 3978-IND.

32. Post-crisis project cancellations and deferrals mean that PLN is now in compliance with the reserve margin condition.

33. Which has tainted PLN in the public eye, despite its relative distance from and objections to many of these deals.

1320 MW Tanjung Jati C plant from being signed *after* the decree putting the IPP program on ice was issued. The Bank wrote to key ministers in November 1997 indicating that proceeding with this deal would preclude new lending to the sector, but to no avail. In these circumstances, refraining from new lending until greater transparency and better governance took hold was clearly the correct course of action. However, this was by no means the majority view within the Bank, given that new lending operations in the sector continued to be prepared until January 1998, when GOI was informed that processing of new loans was suspended.

31. The country is still burdened by the unfortunate legacy of the private power program and five years after the GOI's decision to reexamine the agreements with 27 IPPs, new contractual agreements have still to be finalized with many of them³⁴. At the time of the PPAR mission in mid-2002, six projects had reached an agreement on close-out, and prices and terms had been successfully renegotiated for ten more projects (although without contracts finalized in most cases). Three projects were still in arbitration and eight others have been set to one side, being "under discussion"—mainly those with minimal investment outlay. The delays are the result of several factors, including the lack of a clearly defined framework for resolving the IPP issue in a comprehensive, rather than ad hoc manner. In addition, there was strong pressure (both within PLN and outside) to take legal action against a number of IPPs. At the same time, GOI was also under intense pressure from commercial and bilateral lenders, export-import banks, and trade insurers to respect the original contractual terms of the PPAs. Another cause appears to be the unwillingness of government technocrats to make decisions without clear political backing for fear of being seen to have agreed to overgenerous terms for the project owners. The political uncertainty in Indonesia since the downfall of the Suharto regime made it hard for such clear political directives to be obtained by GOI from Parliament.

32. Despite strong indications that some of the IPP projects had inflated capital costs, it has turned out that in several cases the renegotiated terms do not amount to a real cost reduction to PLN over the life of the contracts, because in exchange for a reduced levelized tariff, the duration of the contracts has been extended³⁵ and/or the capacity factor increased. In other words, it may be more accurate to describe these "renegotiations" as a form of rescheduling because the total obligation of GOI has not been reduced. The IPPs claim to have taken significant equity write-downs but lenders appear to have emerged relatively unscathed. The slow pace of settling these issues is in sharp contrast to the renegotiated PPAs in Pakistan, which were handled relatively expeditiously and firmly after the change of government there, albeit with some collateral damage to Pakistan's international standing with respect to foreign investment. Extending the duration of PPAs will mean that future generations of Indonesian electricity consumers will be obliged to bear the burden of the contracts entered into by the Suharto ruling elite and the poor negotiating position of its successor governments.

JAVA-BALI SUPPLY-DEMAND BALANCE

33. PLN faces a looming shortage of generation capacity in its Java-Bali system, which could lead to load shedding at peak times as soon as 2004. Rising demand, driven by economic recovery, low tariffs and new residential consumer connections,³⁶ have wiped out the surplus capacity that PLN was saddled with in the late 1990s. In the wake of the 1997 freeze on new IPPs, little new capacity

34. The Region pointed out that restructured PPAs have now been signed for all the of the large operating IPPs, which are being dispatched at very high levels and PLN has been making its payments in full since the interim agreements were signed.

35. For example, it appears that the PPA with Paiton Energy has been extended from 30 to 40 years, an unprecedented duration anywhere. PLN is also required to pay off arrears to Paiton Energy of US\$4 million per month for 30 years.

36. Albeit at a reduced pace than in the pre-crisis period.

has been commissioned recently. Nor is there any additional capacity under construction, either by PLN or the private sector.³⁷ The Bank's own analysis of the Java-Bali supply/demand balance³⁸ indicates that a *minimum* of 1600 MW of additional capacity is required by 2005. While tariff increases may be moderating consumption by existing consumers, there is still considerable pent up demand and waiting lists for connections. In addition, there is evidence that some owners of captive plants are switching back to PLN supply because diesel prices are rising more steeply than electricity tariffs. Other than a crash program to install gas turbines, it is already too late to bring new plants on stream in time to avert shortages, even if funding were available, which is far from the case.

34. Despite the reluctance of the World Bank and ADB to fund new thermal generation in the public sector in recent years, the radically changed circumstances in the Indonesian power sector mean that this policy is no longer suited to the prevailing supply/demand conditions. This situation is not limited to Indonesia because foreign investment interest in IPPs in developing countries in general has slowed to a trickle. In the context of Indonesia's still unresolved macroeconomic problems and the poor legal and administrative environment for foreign direct investment, there are slim prospects of attracting *new* investors³⁹ into power generation, although two existing IPPs are negotiating to increase the capacity of their existing plants.

35. Bank Group (and/or ADB/JBIC) involvement in new generation projects to plug the supply gap before the completion of Tanjung Jati B therefore seems to be justified. This would have to be based on gas turbines, the most rapid type of plant to bring into service. However, since additional natural gas will not be available in the short term, a crash program of gas turbines running on HSD is the only feasible solution to increasing the supply of power, despite the high cost per kilowatt-hour produced.⁴⁰ The economic cost to Indonesia of extended power outages would be much higher, not to mention the political fallout. Industrial production, exports and economic growth would undoubtedly suffer.

36. There will be an understandable reluctance among lenders to revert to the approach of the 1980s (funding of entirely publicly owned generation plants), but there may be alternative ways of structuring mixed public-private generation projects that should be explored.⁴¹ Without the involvement of multilateral lenders in the financing of new generation projects, there is likely to be an upsurge in the purchase and use of private generators, which is a suboptimal solution to power supply. In addition, there is a strong probability of GOI being pushed into opting for hasty, non-competitive, non-transparent, and costly "emergency" operations to alleviate power shortages, for example, through leasing/purchase of gas turbines or possibly new IPPs on unfavorable terms. The unhappy history of the mid-1990s would then be repeated, barely a decade later.

THE GAS-POWER INTERFACE

37. During the Suharto era, PERTAMINA, the national oil and gas company was a law unto itself, accountable only to the President. Its focus was massive LNG export schemes to generate big foreign exchange revenues for GOI. Development of gas for the domestic market was given little

37. However, work may restart soon on the partially built Tanjung Jati B plant, with a view to commissioning the first unit in 2005. GOI has also approved PLN's proposal to install 600MW of open cycle peaking plant in north Jakarta.

38. Indonesia - Review of Electricity Supply and Demand on Java-Bali, June 2001 (unpublished paper by the Energy and Mining Sector Unit, EAP Region, but released to PLN and GOI).

39. The Region pointed out that several MOUs to develop new IPPs were signed with Chinese companies in late 2002.

40. A temporary surcharge on electricity bills to cover the higher fuel costs could be envisaged.

41. The public-private consortium building a gas pipeline from Sumatera to Singapore may provide relevant lessons. ADB is a lender to PGN for this project.

importance, although PERTAMINA was required by GOI to supply gas at very low prices to 'strategic' industries (fertilizer and steel). There is no east-west gas trunkline on Java, nor does a gas pipeline link Java to Sumatera, even though this has been mooted for at least a decade.⁴²

38. It is paradoxical that gas is in short supply for power generation in a country which is one of the world's biggest producers and exporters of gas and which has massive undeveloped gas reserves. Even though GOI did not impose limits on the gas sale price to PLN, oil companies were deterred from exploring for small reserves for the domestic market by the low gas price for strategic users. Gas supply to several key power plants in Java is now constrained and the production from fields supplying them is expected to decline sharply in the near term, exacerbating PLN's already inadequate gas supply. Currently, about 40 percent of PLN's gas turbines on Java operate on diesel rather than natural gas. Worse still, a 300 MW combined cycle plant (Grati) is complete, but has never operated due to lack of gas.⁴³ PLN has a shortage of plant suitable for peak load supply, for which gas is ideally suited. In addition, gas turbines, with their low capital cost per unit of capacity and the speed of supply and erection would be the ideal solution to the looming power shortage in Java, *provided* gas was available.

39. The Ministry of Energy, which had nominal authority over PERTAMINA, was unable to play an effective energy sector coordinating and planning role during the Suharto years. PLN was treated as a minor customer that had little say over the quantity and price of gas offered to it, often on a "take or pay" basis. This neglect of a key gas-consuming sector reflects poorly on both PERTAMINA and GOI. Its cost to Indonesia in terms of suboptimal fuel use (diesel), selection of more costly power plants (coal) and dirtier emissions probably runs into tens of millions of dollars annually. The recently passed Oil and Gas Act (October 2001) considerably reduces PERTAMINA's powers over gas development, at least in theory. But it is likely to be reluctant to surrender its control over large-scale gas supply arrangements. Nevertheless, the new Act does enable the ministry to exercise its prerogatives over the energy sector as whole and this should also improve coordination between future power and gas development.

THE BANK'S ROLE AND ITS RELATIONS WITH THE BORROWER

40. During a 25-year period up to 1996, the Bank made a new loan to PLN virtually every year and the power sector accounted for more than 20 percent of the Bank's total financial assistance to Indonesia. PLN was one of the largest single IBRD borrowers. Until the early 1990s, the World Bank and ADB were PLN's principal source of foreign funds for its large capital investment program. As such, these two lenders have played a key role in aiding in the phenomenal expansion of electrification in Indonesia.

41. The working relationship between the Bank and PLN staff was also extremely close and based on long-standing, collaborative relationships with a shared long-term vision of sector development. The present top management of PLN has in effect been in close contact with several "generations" of Bank power sector staff during their careers at PLN and is closely familiar with the institution.

42. However, the two entities have lost their former close working links since the 1997-98 economic and political crises. Yet this "disengagement" by the Bank was not envisaged before the

42. JBIC is seriously considering this project, but it would enter service in 2007 at the earliest.

43. Current transmission bottlenecks would also prevent its potential output from being fully dispatched without backing down other plants.

crises. Four new projects⁴⁴ were at varying stages of preparation in mid-1997; two had even been appraised, but were held up by Bank management dissatisfaction over GOI's unwillingness/inability to halt new IPP deals (para. 30). In early 1998, the Bank offered to carry out a reallocation of undisbursed funds from ongoing projects to higher-priority needs, provided GOI demonstrated its resolve to address the crisis facing PLN through tariff increases and a rationalization of the IPP program. However, this did not take place and large unused balances were canceled from several loans, despite PLN's pressing needs, particularly for spare parts for diesel generators outside Java.

43. Although the Bank had been very active in advising on overall power sector reforms until 1999, it was hesitant to embark on new power sector⁴⁵ lending operations linked to institutional reforms, partly due to concerns about GOI's ability to implement the clearly ambitious program in the uncertain political context⁴⁶. This contrasted sharply with ADB's position. The latter's decision to fund a major power sector adjustment operation tacitly gave it leadership over sectoral reform issues. By late 1988, the Bank and ADB had agreed on a division of labor whereby the Bank limited its involvement to PLN's corporate and financial restructuring. This split persists, but has several drawbacks. Sectoral reform and PLN's restructuring are necessarily interlinked. Bank staff now have only an arm's-length involvement with institutional and regulatory issues and are not called upon by GOI to advise or comment on these questions. Greater coordination and consultation among the various interested parties would be a better approach⁴⁷, but this depends in part on an active reengagement in the sector on the part of the Bank (paras 49-51).

44. In the mid-1990s the Bank emphasized the benefits to Indonesia from developing the domestic gas sector, including the substitution in industry and power of gas for exportable oil, but little progress has been made since then. In the past, the Bank never succeeded in establishing any kind of dialog with PERTAMINA. However, the Bank was able to establish working relations with the gas distribution company PGN, which was also a Bank borrower in the early 1990s.⁴⁸ Subsequent projects with PGN were prepared, but shelved following the 1997 macroeconomic crisis.⁴⁹ Discussions are now ongoing with regard to a future lending operation for gas distribution, but its further processing depends on evidence of firm funding for Pagar Dewa field development by PERTAMINA and for the S. Sumatera - W. Java gas transmission pipeline by PGN.

45. By mid-1999, the Bank was emphasizing AAA work in the energy sector and carried out several important pieces of sector work to provide the basis for future lending. These included a review of electricity supply and demand in Java-Bali, a resolution framework for the rationalization of the IPP program and a study of the oil and gas sector that focused on petroleum product pricing, PERTAMINA's role and the need for new oil and gas legislation. The Bank's AAA in this area

44. The Java Distribution and Eastern Indonesia Renewable Energy Development projects had been appraised, while the Kalimantan & Sulawesi Power Development and Eastern Islands Power Sector Development projects were at the pre-appraisal stage.

45. However, in mid-1999 an energy sector operation was being considered, with a greater focus on oil and gas issues, particularly petroleum product prices. It was partly motivated by a perceived need to provide GOI with balance of payments support.

46. The Region pointed out that at this juncture GOI was also reluctant to allow PLN to borrow for traditional investment projects.

47. An ongoing ADB impact evaluation study by its Operations Evaluation Department of ADB assistance to the Indonesian power sector also concluded that dividing responsibilities among two agencies was inefficient and should be abandoned.

48. The last loan to PGN closed in December 1998.

49. One of them, the gas trunk line from Sumatera to Singapore was later taken up by ADB.

helped prepare the ground for GOI's decision to move progressively back to international parity for domestic product prices. Reduction of these subsidies is also part of GOI's program with the IMF.

46. In 2000, attention had turned to the design of a new Bank energy sector operation (a SECAL) to provide balance of payments support to GOI and cover both gas and power investments. It was to be linked to petroleum product pricing conditionality, which was rightly seen as the most critical financial issue in the sector from a GOI budgetary standpoint, given that GOI subsidies on petroleum products in 1999 were close to US\$5 billion. As proposed, this operation would have represented a significant financial reengagement by the Bank, as well as a widening of its field of intervention to a cover broad spectrum of interrelated energy sector issues.

47. However, following a PCD review meeting in late 2000, the SECAL was redesigned as a two-phase APL, mainly because the need to provide balance of payments support had diminished and fresh adjustment lending to GOI had gone out of favor as IBRD sought to reduce its exposure to Indonesia. The 2001 CAS envisaged a total lending program of only \$400 million, a third of pre-crisis levels, and no non-project assistance. The annual country lending cap of \$400 million has been retained for FY03 in the newly issued CAS update. This greatly limits the size of any future loan to PLN.

48. Subsequently the APL was also dropped in favor of the current proposal of two SILs (one for PLN and one for PGN), which are currently under preparation. These may be more compatible with a greatly reduced overall lending program, but opting for smaller interventions does not mean that key sectoral issues should be left aside. The most pressing issue in the power sector is the need to avert or mitigate the impact of the expected shortage of generation capacity in Java-Bali, which does not appear to be the main focus of the currently proposed project with PLN. The proposed gas project would finance investments in gas distribution, which appears to be of lesser importance when compared to the need for gas trunk lines to supply power plants⁵⁰.

Recommendations

For the Bank

49. The Region needs to consider whether country priorities should include the Bank's active involvement in the energy sector and whether in a severely resource constrained environment like the CAS base case, it is worth attempting to make a meaningful contribution on a shoestring budget. It may be that the resources currently earmarked for energy lending could be used more effectively in other sectors⁵¹.

50. In the event that the Region chooses to continue its support to the Indonesian power sector, it needs to reexamine the current strategy in order for its assistance to remain relevant and responsive to the most pressing short-term problem facing PLN. The Bank should join forces with PLN's other main lenders to structure a new generation project that would also bring in private partners. It is in assisting PLN to find a way out of its current impasse on future new generation, that the Bank can best serve the GOI. Since power shortages can also be averted by other means, particularly on the demand side, other components of the next lending operation could include elements of a wide-

50. The Region pointed out that the new SIL under preparation for PLN also includes a TA component for PGN to address gas pricing, the structure of the domestic gas sector and private sector participation in gas transmission and distribution.

51. The Region commented that they have "already acknowledged the need to place renewed emphasis on infrastructure". And in Indonesia's specific case, a major AAA work, "Averting an Infrastructure Crisis in Indonesia", is being undertaken this FY. This will feed into the new CAS for Indonesia, thus providing guidance to the allocation of resources between infrastructure and non-infrastructure sectors, and between infrastructural subsectors.

ranging DSM program, power plant rehabilitation, removing network bottlenecks, and a crash program to enhance gas supply to Javanese power plants⁵².

51. For the medium to long term, it would seem that the Bank could play a valuable role if it were to take a more holistic approach to the problems in the *energy* (power & gas) sector and were to address issues such as better coordination of gas and power investments. As this review has attempted to illustrate, the Indonesian energy sector today lacks a clear sense of direction and is drifting into greater difficulties, largely through indecision and inaction. A larger scale involvement by the Bank than currently envisaged could have a positive impact and is likely to be well received by all actors involved in the sector. However, to do so, the Region has to be prepared to fund a substantial increase in staff and other resources in order to make a substantive contribution to resolving the energy sector's problems.

For Indonesia

52. PLN needs to bring the renegotiation of PPAs with existing IPPs to a rapid close to pave the way for attracting additional IPP capacity in the medium term. Almost five years have elapsed since the GOI decision to reexamine the contractual arrangements with IPPs.⁵³ The prolonged uncertainty is harmful for new investor sentiment well beyond the power sector as well as damaging to relations between PLNs and existing IPPs.

53. PLN should examine all available remedies that could alleviate the severity of the load shedding, and mitigate the economic cost to the country of power shortages, pending the commissioning of new plants in the medium term. Such measures would include rehabilitating older units to restore currently unavailable derated capacity, using liquid fuels in plants that suffer gas shortages, peak shaving measures such as interruptible supply, introducing time-of-day tariffs, the concerted use of private captive generation to supply third parties, drastically cutting back on new consumer connections, and eliminating transmission bottlenecks both within the PLN grid as well as with captive producers.⁵⁴

54. Financing for PLN's proposals for additional medium-term capacity, such as the repowering of Muara Karang and the expansion of Muara Tawar plants should be sought from PLN's traditional funding sources⁵⁵, in conjunction with some borrowing in the local capital market and increased GOI capital contributions⁵⁶ for the most urgent medium-term sectoral needs. Although these projects would be not be ready in time to avert shortages in 2004–05, they would be valuable in closing the medium-term supply gap.

52. The Region pointed out that "PLN themselves rejected the inclusion of the first two items in the new SIL. The first item was excluded by PLN because it is to be supported by grant financing from USAID, and the second item was excluded because the required feasibility studies for such rehabilitation projects have not yet been undertaken. PLN did not want to halt processing of the SIL in order to wait for these studies to be completed, as this would delay the commissioning of the urgently-needed network debottlenecking components to be financed by the Bank under the SIL. Consequently, the third item in the list is the focus of the new SIL for PLN. Even if the generation shortfall issue is resolved, there are numerous subregions within PLN's Java-Bali network where local demand growth is already capped by network constraints between transmission and subtransmission, and between subtransmission and distribution."

53. In comparable circumstances, Pakistan was able to conclude new PPAs with its IPPs in two years (1998–2000). Some of these also involved a reduction in the sponsors return on equity. See ICR # 22157 & 22160 for the Private Sector Energy Development projects, May 2001.

54. Most of these recommendations have already been made by the Bank to GOI during the past year and PLN is now working on many of them.

55. JBIC funding for these has been agreed in principle.

56. GOI should consider the sale of PERTAMINA's filling stations to raise funds for new generation investments.

55. GOI should define a policy for the development of untapped gas reserves and determine how much gas it is willing to devote to the domestic market on a long-term basis. This is crucial for long-term power system investment planning⁵⁷.

56. Integrated gas/power analysis and planning needs to be done⁵⁸ to make up for the neglect in developing a gas transmission network, which would have the power sector as its “anchor” customer.

57. The decision to have a separate regulator for gas and power should be reconsidered. In several Latin American countries where gas supplies a significant share of the power market, there is a single regulator for both sectors. Even the UK has recently merged the gas and power regulatory functions in a single body.

Part II. Project Performance Assessments

SURALAYA THERMAL POWER PROJECT

Background

58. The Suralaya Thermal Power plant is located on the coast of West Java, about 100 kilometers west of Jakarta, separated from the southern tip of Sumatera by the narrow Sunda Strait. The first phase of four 400 MW coal-fired units was built in the mid-1980s, partly with Bank financing. The plant burns coal mainly from South Sumatera that is delivered by rail to the coast and then shipped across the strait to Suralaya. The site was developed with an expansion to seven units in mind.

59. Forecasts for Indonesian GDP growth for the first half of the 1990s were in the 6 to 8 percent range, implying industrial sector growth above 10 percent, which in turn meant that electricity demand growth would be in the 12 to 15 percent range. PLN had a massive investment program⁵⁹ and was seeking to expand access to electricity as fast as possible. In this context, the possibility of generation overcapacity was too remote to be considered. On the contrary, for the first time in the early 1990s, GOI began to seriously examine the option of private power generation in the form of build-own-operate (BOO) projects as an essential adjunct to PLN’s own expansion program.

60. The project dates from an era when the Bank had a new lending operation in the power sector virtually every year. The engineering study and environmental assessment for the expansion of the Suralaya plant were carried out under a previous Bank project. The ADB also participated in funding the Suralaya extension with a \$350 million loan.

Objectives

61. As stated in the SAR, the objectives of the Suralaya Thermal Power Project were to (a) expand the national power utility’s (PLN) generating capacity in Java, (b) promote the economic use of coal for electricity generation, (c) develop PLN’s institutional capacity to operate and maintain thermal power plants, and (d) strengthen its financial position.

57. Ongoing ADB and USTDA studies that address Java’s gas demand and supply options will assist in this regard.

58. Also recommended by various recent Bank reports.

59. Over \$17 billion was envisaged for the sixth 5-year plan period 1994–98.

62. These objectives were relevant, appropriate, and consistent with the development strategy of the power sector at that time. Viewed from the perspective of the present problems in the sector and the Bank's current assistance strategy, the objectives remain relevant, with the possible exception of promoting coal use. In fact, strengthening PLN's finances has taken on even greater importance in recent years and is top of the sectoral agenda. PLN's sales grew by 15 percent annually during the 1980s and at the time of project appraisal it faced a supply crunch, forcing it to impose rotating power cuts on industrial users. While scarcity turned into a glut for a few years, there is again a real prospect of electricity supply shortages.

63. The project also attempted to build on a recently completed institutional study of the sector⁶⁰ that recommended greater decentralization of PLN's operations, the introduction of an automatic quarterly tariff adjustment mechanism, and the elimination of the indirect subsidy to PLN in the on-lending terms of Bank loans.

Appraisal and Quality at Entry

64. The appraisal did not adequately examine coal supply issues. Possibly due to GOI's ambitious plans to expand coal production, the availability of suitable coal was not expected to present any difficulty. Plentiful proven reserves of good quality were located nearby in South Sumatera. The Bank's principal concern was that PLN should procure coal through competitive tendering procedures acceptable to the Bank, and an assurance to this effect was obtained at loan negotiations. The plant was not expected to have any problems in dealing with a range of coals from different sources. The SAR (para. 5.13) states, "The boiler design and the arrangement of the coal handling system at Suralaya is based on the characteristics of a range of coals that could be procured for the plant from mines in Kalimantan, S. Sumatera or Australia."

65. While it is true that the plant can burn coal from a variety of sources, it has turned out that its technical performance, particularly of the original four units, is best when using coal from the Bukit Asam mine in South Sumatera, upon which the original project design was based. Unfortunately, sufficient coal (9–10 million tons per year in total) cannot be obtained from Bukit Asam, for both logistical and financial reasons. At present PTBA (the mine company) supplies Suralaya with about 6 million tons and prefers to export about 2 million tons for a higher price rather than sell it to Indonesia Power (IP).⁶¹ In addition, the railway track⁶² to the marine terminal on the Sunda Strait would also have to be upgraded to deal with the higher volumes needed by Suralaya, since currently it can only be used to transport about 8 million tons. Hence, the Suralaya plant relies on nearly 4 million tons of coal from several Kalimantan sources. This coal is cheaper than that from PTBA, is satisfactory in terms of its calorific value and sulfur/ash content, but is significantly harder, making pulverization more difficult. Consequently, it has had adverse consequences on the heat rate and plant availability, particularly of the older units of the power plant. These risks were not anticipated at the time of appraisal.

66. As pointed out by the ICR, the project did not contain any specific components in pursuit of the objective of strengthening PLN's finances. The only new financial policy measure to be introduced as part of the loan conditionality was an automatic quarterly tariff adjustment mechanism. No action was envisaged to address the ever-growing burden of the cross-subsidy between PLN's profitable Java-Bali system and the loss-making outer islands systems.

60. Indonesia Power Sector Institutional Development Review, 1989 (Report no. 7927-IND).

61. Indonesia Power is a PLN (wholly owned) generation subsidiary company.

62. Which does not belong to PTBA but to the national railway company PTKA. The latter is unwilling to invest in upgrading without an increase in the coal transport tariff.

Implementation

Physical Components

67. The three 600 MW units were built under budget⁶³ and ahead of schedule. All three have been in service since late 1997 and have not encountered any significant technical problems. Average plant availability has risen steadily from 74 percent in 1998⁶⁴ to 89 percent in 2000 and 2001, above the 80 percent benchmark indicated in the ICR. Plant utilization has also risen from a low 52 percent capacity factor in 1988 to 72 percent in 2001,⁶⁵ as electricity demand has risen and earlier surplus capacity has been absorbed. However, the coal consumption per unit of output was slightly higher than the benchmark⁶⁶ and consequently the net thermal efficiency of the units (which has shown little improvement since commissioning), remains slightly below the ICR benchmark of 36 percent, possibly due to variations in coal characteristics.

68. As regards fly ash handling and disposal, which were identified in the ICR as areas of environmental concern, the site visit by OED revealed that IP has taken steps to rectify earlier shortcomings. Ash sales for cement, construction, landfills, etc. in 2001 permitted IP to dispose of almost three-quarters of the ash production of 260,000 tons. Hence, the ash disposal area is filling more slowly than feared at the time the ICR was written. In June 2002, only a quarter of the available space in the site had been filled after 16 years in use. Based on a superficial inspection, the site appears to be well managed with compaction, drainage, landscaping, and revegetation works being undertaken.

69. The advancing age of Units 1 through 4 of the Suralaya plant⁶⁷ now make it timely to rehabilitate their boilers. In addition, the control system for these units is now obsolete and unreliable. Obtaining spares parts for it is hard and complete replacement by a state-of-the-art system appears necessary. These investments should be considered in any forthcoming Bank lending operation, particularly given the Bank's long involvement with this plant.

Financial Objective

70. The automatic tariff adjustment mechanism was implemented in late 1994. It gave PLN partial protection against larger-than-forecast changes in fuel and power purchase costs, local inflation, and currency depreciation. The mechanism was a significant step forward because previously tariff increases tended to be made only once every three years by Presidential decree. It operated during the three years preceding the macroeconomic crisis, but proved to be unsatisfactory in that the resulting adjustments were much below the increase in PLN's costs or the rate of inflation⁶⁸. Following the onset of the crisis, it was abandoned due to the magnitude of the changes in the key parameters to which it was linked. Applying the mechanism during the 1997–98 crisis would have been extremely difficult politically at a time when real wages were being eroded and unemployment rising. Tariff-setting then reverted to its former political-administrative mode.

63. Over 30 percent of the Bank loan was canceled due to substantial cost savings.

64. The first full year of operations.

65. The ICR benchmark was 70 percent.

66. 462 grams per kilowatt-hour in 2001 versus the benchmark of 455grams.

67. Units 1 & 2 date from 1984–85, Units 3 & 4 from 1988–89.

68. The 1994 starting point to which subsequent automatic increases were applied was also too low.

71. However, even before the onset of the 1997 crisis, PLN was not in full compliance with financial covenants to Bank loans, particularly the requirement to earn an 8 percent rate of return on its net revalued fixed assets,⁶⁹ which had not been met since 1994, due to reluctance to raise tariffs. Pre-crisis average tariffs in mid-1997 were at their lowest in real terms for a decade, which made the scale of the post-crisis increases even greater. At best, PLN managed to earn a 5 to 6 percent rate of return before the 1997 crisis and it has been negative since then. The financial consequences of the crisis for PLN are discussed in Part I of this report (paras. 8–12).

72. The on-lending terms for IBRD loans to PLN were revised as part of this operation in order to eliminate the GOI subsidy to PLN. However, with hindsight it is apparent that this change was premature and exacerbated the burden on PLN's finances in the wake of the massive devaluation of the Rupiah. The variable fee⁷⁰ to be charged by GOI to PLN for carrying the foreign exchange risk on the Bank loan was equal to the average of the annual rate of change in the value of the Rupiah against the U.S. dollar during the previous three years.⁷¹ Following the currency collapse, the fee worked out at an interest rate of over 180 percent payable by PLN to GOI.

Project Ratings

Relevance of Objectives

73. The relevance of the project's objectives is rated **high**. They addressed the right priorities in the power sector at the time of appraisal and three out of four objectives remain relevant today.

Efficacy

74. Two objectives of the project were of secondary importance (promotion of coal use and institutional development) and have limited bearing on an assessment of the project's efficacy. The other two objectives were vital. Expanding generation capacity has been fully achieved. Furthermore, Suralaya's location in west Java and its proximity to Jakarta has proved to be a massive additional advantage to PLN, given the lengthy delays in implementing the extra-high voltage east-west transmission links. On the other hand, the objective of improving PLN's finances has not been achieved. Quite the reverse, - its financial condition has declined dramatically. Nevertheless, this PPAR considers the project's overall efficacy to have been **substantial** because of the lasting economic benefits from the expansion of power supply.

69. Under the Suralaya project this applied to Java only. Break even was the financial goal for non-Java systems. This covenant was toughened in later loans by the inclusion of non-Java assets in the 8 percent rate of return target. A further rise to 12 percent for Java only was mooted for the new project appraised in 1997 (but never finalized due to the crisis).

70. Over and above the standard IBRD variable lending rate.

71. ADB also adopted the same formula for its loans to PLN. However, possibly due to its complexity, it was abandoned in the Bank's last loan to PLN and replaced by GOI on-lending in dollars with PLN responsible for covering the foreign exchange risk.

Efficiency

75. The marginal ex-post EIRR of the project,⁷² due to the low level of tariffs and the underutilization of the plant in the initial years after commissioning (due to a glut of generation capacity) requires that project efficiency be rated **modest**.

Institutional Development Impact

76. Although the project's technical training component was implemented successfully, the overall ID impact of the project is assessed as **modest**, given the lack of progress in strengthening PLN's financial capacity.

Sustainability

77. The technical sustainability of the project is assessed as likely. Suralaya is a key plant in PLN's system, given its large size and proximity to the Jakarta metropolitan area. It is therefore well maintained, despite PLN's financial difficulties. However, the financial sustainability of the project is uncertain, given that the timing of PLN's return to solvency is unknown.

78. Overall sustainability is hard to determine, given the prevailing uncertainty regarding sector finances. It has therefore been rated as **unlikely**.

Bank Performance

79. The overall performance of the Bank during the project is considered to have been **satisfactory**.

Borrower Performance

80. PLN's performance is assessed as highly satisfactory. In contrast to other Bank projects with PLN, which have often encountered substantial completion delays, Suralaya was well managed, completed smoothly and on time.

81. GOI's performance is rated as unsatisfactory because of the prolonged delay in restoring PLN to financial solvency. However, on balance overall borrower performance is assessed as **satisfactory** because GOI's shortcomings in addressing sectoral issues occurred at the end of the project, after the plant was already commissioned.

Project Outcome

82. PLN's ongoing deep financial crisis prevents this project from being rated fully satisfactory. However, the successful and timely implementation and satisfactory operation of the new units of the Suralaya plant since commissioning are important achievements and deserve recognition. As mentioned earlier, the plant plays a key role in ensuring that satisfactory power supply is maintained to the Jakarta metropolitan area and its key industrial belt. This PPAR therefore assesses the project outcome as **moderately satisfactory**.

72. Without inclusion of the estimated consumer surplus the EIRR on PLN's 1992–98 investment program is negative. Even with the consumer surplus the EIRR is 12% vs. an estimated 20% at appraisal.

SUMATERA & KALIMANTAN POWER PROJECT

Background

83. In 1993–94, when this project was being processed, the Bank had a two-year power sector lending program of four new projects amounting to nearly \$900 million. Sector reforms were receiving greater prominence in the Bank's dialogue with GOI. It was apparent that PLN as a single entity was growing too large and unwieldy to manage, and the pressure to decentralize was increasing, both for reasons of efficiency as well as to make it more responsive to consumers. Meanwhile, the financial cost of its loss-making electrification programs outside the Java-Bali system was increasingly burdensome.

Objectives

84. The objectives of the project were to support *the first phase of GOI's long-term policy agenda for the power sector* aimed at (a) increasing private sector participation to accelerate expansion of generating capacity and upgrade sector operating standards, (b) restructuring PLN to improve its operational performance, (c) formulating and implement regulations to promote efficiency in sector operations, (d) introducing a formula-based tariff adjustment mechanism, (e) helping finance environmentally sustainable expansion of PLN's system in Sumatera and Kalimantan with centralized grid systems, and (f) providing TA to GOI and PLN in demand management, efficiency improvements, and environmental management.

85. In reality, these ambitious objectives (a to d) were more a statement of the Bank/GOI's overall power sector goals rather than true project objectives, as can be seen from the opening phrase of the statement of objectives (italicized above). The stated objectives of this project have to be viewed in that context. The importance and relevance of most of them is indisputable, but as discussed below, they were only remotely linked to this project. Unfortunately, in an ex-post evaluation of project outcomes versus objectives, the inclusion of extraneous objectives in a SIL inevitably leads to unfavorable project performance ratings.

86. The relevance of objective (a) greatly diminished in the rush of transactions with private parties for power supply in the mid-1990s. By the time the rules and procedures for the solicitation and evaluation of proposals for private power had been drafted in late 1996, most of the contracts with suppliers had already been finalized. The problem had changed from how to increase private participation to how to discourage yet more unsolicited proposals. In addition, the 1997 economic crisis, which cut the rate of demand growth for electricity also greatly undermined the viability of foreign private investment in power generation.

87. Objective (d) was redundant. It had already been an explicit goal of the preceding Suralaya Thermal and Cirata II Hydro Projects and GOI had already decided to introduce it by the time this project was approved⁷³. Objectives (e) and (f) are a description of the project's physical components rather than objectives in themselves.

73. The Region disagrees, pointing out that the Presidential decree was not issued until October 1994, after Board presentation.

Design and Quality at Entry

88. The Regional Loan Committee had directed that the project be designed as a “hybrid,” with a policy agenda and investment components. Hence, the Bank had asked GOI to provide it with a statement of power sector policy⁷⁴ as a condition of negotiations. Regional management viewed the policy letter as “providing an umbrella for a series of planned second generation power loans,”⁷⁵ in the manner of an APL, although this instrument had not yet been devised when this project was under preparation. Thus, broader policy goals were incorporated in a traditional SIL. In this manner it was possible for staff to demonstrate that there was also a broader ongoing dialogue with GOI on these issues, which was indeed the case. Although the policy letter is short on detail and timing, staff viewed it as a significant breakthrough, given GOI’s traditional reluctance to undertake reforms. In addition, coming only a year after the publication of the Bank’s 1993 power sector policy paper, staff would also have felt the need to show compliance with the lending principles laid out in it.

89. Due to the flawed hybrid design, the project alone could never have met its wide policy objectives because it did not contain components or provide resources to further the policy objectives (a to d above). Yet at loan negotiations GOI had committed to carry out key studies on private power development and the regulatory framework, which were *not* included in the scope of the project, although they came to be funded from other ongoing Bank operations. However, *no* provision was made for assistance in PLN’s restructuring (objective b), until a new project was approved two years later. Nor was there any agreed timeframe for restructuring PLN. This assessment concurs with the ICR in rating the quality at entry as *unsatisfactory* because of the mismatch between objectives and instruments and the lack of agreed actions and milestones.

90. On a more positive note, it should be recognized that the project is noteworthy in that it was the first-ever Bank project whose investments were *entirely* outside the Java-Bali system. As such, it was a long overdue correction to an excessive concentration by the Bank on the latter. At the time of appraisal the outer islands of Indonesia accounted for about 40 percent of the population but only 20 percent of PLN’s sales. Well over half of the electricity consumed outside the Java-Bali system was produced by captive generators.

Implementation

91. The physical components were dominated by the construction of the Besai 90 MW hydro powerplant in South Sumatera and the 130 MW Banjarmasin coal-fired plant in South Kalimantan. In addition, the project funded the acquisition of 40 MW of barge-mounted diesel generators and gas turbines to be deployed wherever required to alleviate power shortages.

92. The Banjarmasin plant was completed below the appraised cost, but was almost two years late to enter service. However, it has since operated satisfactorily on base load at a reasonable capacity factor.⁷⁶ Stack emission data for 2001 indicate that the plant is performing well below environmental ceilings for flue gases. A small resettlement program for 36 families was well executed.

74. Although annexed to the SAR, the policy letter is unusual in that it is undated, unsigned, and is not on GOI letterhead. A copy of the official transmittal letter dated May 9, 1994 from the Minister of Mines and Energy was traced in the archives.

75. Memo from the Division Chief and Director to the Regional Vice President, of 4/12/94 seeking authorization to negotiate the loan.

76. Sixty-five percent in 2001, the first full year of operations. Plant availability was much higher—89 percent.

93. The Besai hydro plant experienced some technical difficulties during construction and was commissioned over a year late. No resettlement was required. Proper compensation arrangements were made for the privately owned land that was inundated. However, the plant operated only for six months because the powerhouse was completely flooded in January 2002, with considerable damage to electromechanical equipment. Repairs took almost six months and the plant is now back in service.

94. The cause of the powerhouse flood was a major landslide downstream of the plant, which dammed the river and caused water to back up and fully inundate the powerhouse. The slippage was of an unstable “spoil” dump, which had not been properly designed and constructed. An earlier slippage of the same dump had caused a less severe flood of the powerhouse during construction, but no action was taken at that time to prevent a recurrence. PLN and its engineering consultants should have reviewed the dump designs and required the contractor to modify their construction before project completion. This would have prevented a costly recurrence of the powerhouse flood as well as considerable inconvenience and economic losses to consumers in South Sumatera during several months of major load shedding during the first half of 2002.

95. To safeguard the future of this plant, substantive remedial civil works are needed to stabilize the spoil dumps and to deal with an unrelated potential rockfall hazard identified by a recent Bank supervision visit to the site. Ideally, these works should be undertaken as soon as possible, in order to ensure that there is no risk of yet more damage in the coming rainy season. PLN has commissioned an independent investigation into the accident to ascertain responsibility for the poor design and construction of the dumps and consultants are to design and cost the remedial works. PLN has indicated its readiness to fund these from its own resources.

Project Ratings

Relevance of Objectives

96. Despite reservations about the need for objective (d) and the fact that objective (a) became irrelevant due to changed circumstances, the overall relevance of the project objectives was **high**. Institutional reforms, restructuring of PLN and sector finances are still the top issues confronting the Indonesian power sector.

Efficacy

97. This PAR assesses the project’s efficacy as **modest**:—most of the project’s objectives were not achieved.

Efficiency

98. Given that the ex-post EIRRs on the two major project components⁷⁷ are satisfactory when an estimate for consumer surplus is included in the benefit stream, the overall project efficiency is rated **substantial**.

77. Nine percent for Banjarmasin, which rises to 14% by including the estimated consumer surplus. Besai’s EIRR has been recalculated to be 11 percent and 14% with consumer surplus. The appraisal values with consumer surplus were 15% for Banjarmasin and 14% for Besai.

Institutional Development Impact

99. The satisfactory results from the TA components to enhance the environmental management capabilities in both the coal and power sectors justify a **substantial** rating for the project's ID impact.

Sustainability

100. The technical sustainability of the Besai hydro plant is unlikely unless full remedial works to eliminate the risk of powerhouse flooding are completed and the spoil dumps prove to be stable even after heavy rainfall. On the other hand, given satisfactory performance since commissioning, the sustainability of the Banjarmasin coal plant is rated likely.

101. The financial sustainability of PLN is uncertain, given that the timing of its return to solvency is unknown. Overall project sustainability is therefore rated **unlikely**.

Bank Performance

102. The overall performance of the Bank is rated as **satisfactory** but it was only marginally so, because the good quality of supervision could not entirely make up for the poor quality at entry of the project.

Borrower Performance

103. PLN's performance is assessed as only marginally satisfactory because of the long delay in completing the Banjarmasin plant and the failure to identify the risk of further flooding to the powerhouse following the first such incident during construction.

104. GOI's performance is rated unsatisfactory because of its inability or unwillingness to restore PLN to financial viability within a shorter period. Operating losses over a half decade or longer for a company of PLN's size and importance are unacceptable.

105. Overall borrower performance is therefore rated **unsatisfactory**.

Project Outcome

106. This PAR evaluates the overall project outcome as **unsatisfactory** because its physical accomplishments are outweighed by the lack of results in meeting the project's policy objectives.

Issues for Further Consideration

107. Given the size (3400 MW) of the Suralaya plant and its importance to the Java-Bali power system (almost 20 percent of capacity, located relatively close to Jakarta), it is clearly in IP's interest to make long-term supply arrangements for the balance of its coal requirements, either from Bukit Asam or from an alternative source that meets all quality criteria necessary for the optimum operation of the plant. A techno-economic study of the cost of suboptimal plant performance resulting from the use of the present mix of coal needs to be undertaken to determine what premium IP could afford to pay PTBA to have access to additional coal from Bukit Asam.

108. There is a case for the Bank to be involved more closely with the remedial works at the Besai hydro plant (para. 95) to ensure the sustainability of the project and to ensure compliance with its policy safeguards on the maintenance and safety of hydroelectric projects. The possibility of Bank financing of these works should also be explored, given PLN's tight finances.

Findings and Lessons from the projects

109. The following lessons emerge from the performance assessment of these two projects:

- Meticulous coal quality monitoring is essential for a plant where minor differences in coal characteristics can have a significant impact on boiler efficiency and, hence, very large financial consequences (para. 65).
- A secure long-term supply contract for coal with the optimal characteristics for the Suralaya boilers may justify the payment of a price premium because of the financial consequences of a poorer heat rate, plant unavailability due to more frequent outages and increased maintenance costs (para. 65).
- An automatic tariff adjustment mechanism can only operate satisfactorily under relatively stable macroeconomic conditions. Massive variations in the exchange rate, fuel prices, and inflation, although devastating for power sector finances, cannot be dealt with through a technical formula that is de-linked from socio-political considerations (para. 70).
- Project objectives should be directly linked to project components (paras. 85 & 89).
- Compared to SILs, an APL would appear to be a more appropriate lending instrument for the pursuit of wide-ranging sector reforms that require consensus building and are subject to uncertainties of timing. APLs are particularly suitable instruments in countries where the Bank has a regular sequence of lending operations in the same sector, all of which would benefit from agreement on sector-wide reforms (para. 88).

Annex A. Basic Data

INDONESIA — SURALAYA THERMAL POWER PROJECT (LOAN 3501-IND)

Key Project Data

	<i>Appraisal estimate</i>	<i>Actual or current estimate</i>	<i>Actual as % of Appraisal estimate</i>
Total project costs (US\$)	2024.5	1453.1	72
Loan amount (US\$)	423.6	299.5	71
Cancellation (US\$)		124.1	--
Date physical components completed: December 1998			

Project Dates

<i>Steps in project cycle</i>	<i>Original</i>	<i>Actual</i>
Approval		06/30/92
Signing/Agreement		8/26/1992
Effectiveness		12/23/92
Closing	9/30/1999	9/30/1999

Staff Inputs (staff weeks)

<i>Stage of project cycle</i>	<i>Actual/Latest Estimate</i>	
	<i>Weeks</i>	<i>US\$</i>
Identification/Preparation + Appraisal/Negotiations	95.6	N.A
Supervision	105.2	N.A
ICR	8.1	N.A
Total	208.9	N.A

Mission Data

<i>Stage of project cycle</i>	<i>Date (month/year)</i>	<i>Specializations represented</i>	<i>Performance Ratings</i>	
			<i>Implementation Status</i>	<i>Development Objectives</i>
Identification/Preparation	06/90	2 Engineers 1 Financial Analyst		
	11/90	2 Engineers 1 Financial Analyst		
Appraisal/Negotiation	04/91	3 Engineers 1 Financial Analyst		
	07/91	2 Engineers 1 Financial Analyst		
Supervision	05/93	2 Engineers 1 Financial Analyst 1 Environmental Specialist	S	HS
	06/94	1 Engineer	HS	HS
	03/95	1 Engineer 1 Environmental Specialist	S	HS
	09/95	1 Engineer	HS	HS
	03/96	2 Engineers	HS	HS
	07/97	2 Engineers	HS	HS
	11/97	2 Engineers 2 Economists 1 Procurement Specialist	S	S
	07/98	2 Engineers 1 Environmental Specialist	S	U
	12/98	2 Engineers 1 Financial Analyst	S	U
	04/99	2 Engineers 1 Financial Analyst 1 Operations Officer	S	U
ICR	02/00	2 Engineers 1 Financial Analyst 1 Operations Officer 1 Environmental Specialist	S	U

Performance Ratings: S: Satisfactory; U: Unsatisfactory; HS: Highly Satisfactory.

INDONESIA — SUMATERA AND KALIMANTAN POWER PROJECT (LOAN 3761-IND)

Key Project Data

	<i>Appraisal estimate</i>	<i>Actual or current estimate</i>	<i>Actual as % of appraisal estimate</i>
Total project costs (US\$)	689	425	62
Loan amount (US\$)	261	189	72
Cancellation (US\$)	—	72	—
Date physical components completed: June 2001			

Project Dates

<i>Steps in project cycle</i>	<i>Original</i>	<i>Actual</i>
Approval		6/21/1994
Signing/Agreement		7/25/1994
Effectiveness		11/23/1994
Closing	12/31/2000	6/30/2001

Staff Inputs (staff weeks)

<i>Stage of project cycle</i>	<i>Actual/Latest Estimate</i>	
	<i>Weeks</i>	<i>US\$</i>
Identification/Preparation	241.2	989.0
Appraisal/Negotiations		
Supervision	110.9	495.1
ICR	11.6	47.0
Total	363.7	1484.1

Mission Data

<i>Stage of project cycle</i>	<i>Date (month/year)</i>	<i>Specializations represented</i>	<i>Performance Ratings</i>	
			<i>Implementation Status</i>	<i>Development Objectives</i>
Identification/Preparation	4/92	3 Engineers 3 Financial Analysts 1 Operations Officer 1 Environmental Specialist		
Appraisal/Negotiation	10/93	2 Engineers 2 Consultants 1 Financial Analyst 1 Resettlement Specialist		
Supervision	3/95	1 Engineer 1 Resettlement Specialist	HS	HS
	9/95	1 Engineer	S	S
	3/96	2 Engineers	S	S
	11/96	2 Engineers	S	S
	4/97	1 Engineer	S	S
	7/97	1 Engineer	S	S
	11/97	1 Engineer 1 Procurement Specialist 1 Resettlement Specialist 1 Sector Coordinator 1 Economist	S	S
	7/98	1 Engineer 1 Hydro/Resettlement Specialist 1 Procurement Specialist	S	S
	12/98	1 Engineer 1 Procurement Specialist 1 Financial Specialist	S	U
	4/99	1 Implementation Specialist 1 Engineer 1 Financial Analyst 1 Operations Officer	S	U
	9/99	1 Sr. Project Specialist	S	U
	2/00	1 Project Implementation and Procurement Specialist 1 Engineer	S	U
	1/01	1 Engineer 1 Operations Officer 1 Financial Analyst	S	U
ICR			S	U

Performance Ratings: S: Satisfactory; U: Unsatisfactory; HS: Highly Satisfactory.

IMAGING

Report No.: 25960
Type: PPAR