Report and Recommendation of the President to the Board of Directors

Project Number: 41936
December 2007

Proposed Loan
Republic of the Philippines: Acquisition and Rehabilitation of the Masinloc Coal-Fired Thermal Power Plant

In accordance with ADB's public communications policy (PCP, 2005), this abbreviated version of the RRP excludes confidential information and ADB's assessment of project or transaction risk as well as other information referred to in paragraph 126 of the PCP.

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 21 November 2007)

Currency Unit	–	peso/s (P)
Pesos1.00	=	$0.0231
$1.00	=	P43.14

ABBREVIATIONS

ADB	–	Asian Development Bank
APA	–	asset purchase agreement
CSP	–	country strategy and program
DOE	–	Department of Energy
EIA	–	environmental impact assessment
EIRR	–	economic internal rate of return
EPIRA	–	Electric Power Industry Reform Act
ERB	–	Energy Regulatory Board
ERC	–	Energy Regulatory Commission
IFC	–	International Finance Corporation
IPP	–	independent power producer
Meralco	–	Manila Electric Company
MPPC	–	Masinloc Power Partners Company
NPC	–	National Power Corporation
O&M	–	operation and maintenance
OEM	–	original equipment manufacturer
PEMC	–	Philippine Electricity Market Corporation
PPA	–	power purchase agreement
PSALM	–	Power Sector Assets and Liabilities Management Corporation
PSDP	–	Power Sector Development Program
SIEE	–	summary initial environmental examination
Transco	–	National Transmission Company
WESM	–	wholesale electricity spot market

WEIGHTS AND MEASURES

BTU	–	British thermal unit
GWh (gigawatt-hour)	–	unit of energy
kWh (kilowatt-hour)	–	unit of energy
MVA (megavolt-ampere)	–	unit of apparent power
MW	–	megawatt

NOTES

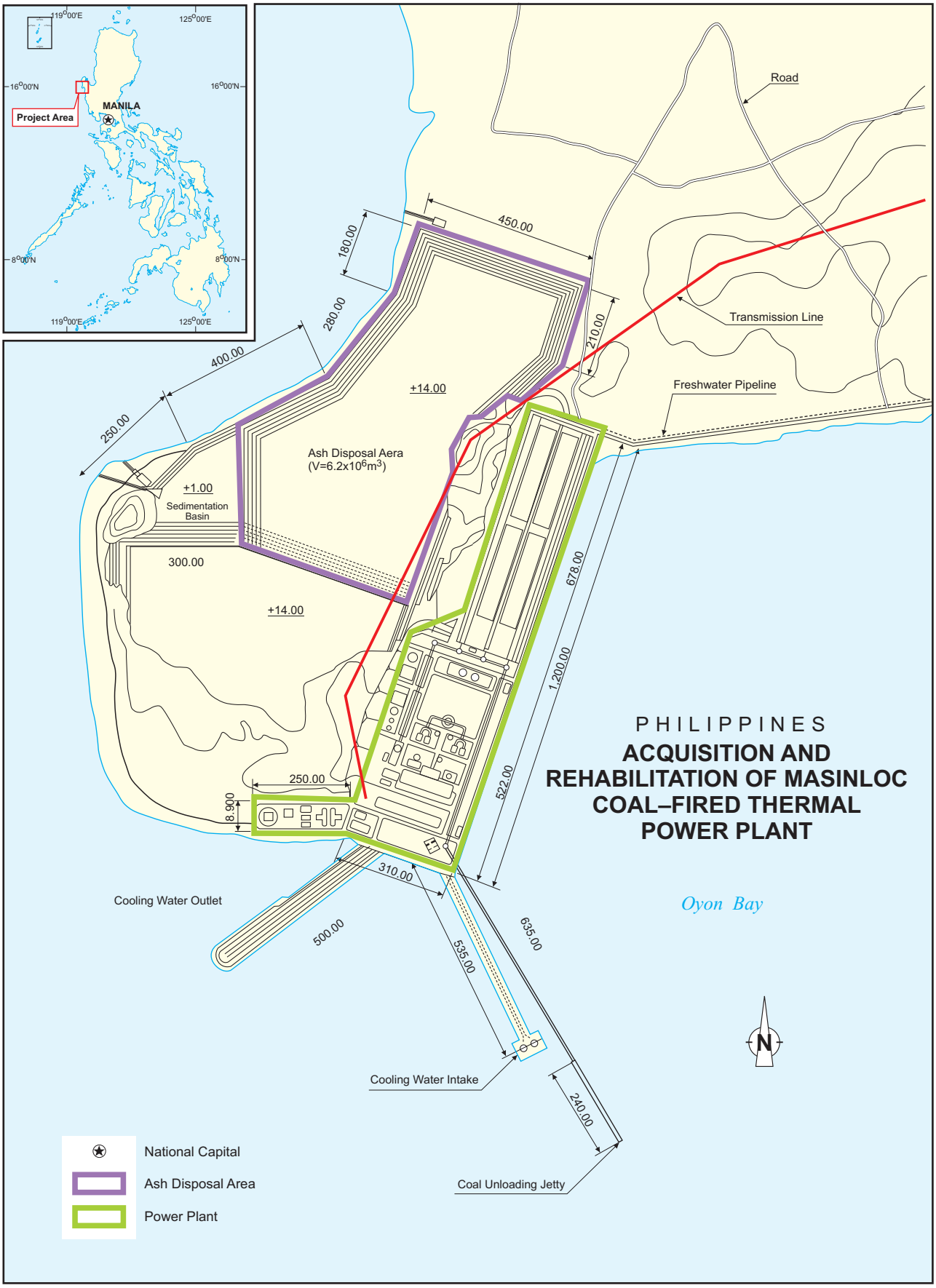
(i) In this report, "$" refers to US dollars.
(ii) The fiscal year (FY) ends on 31 December. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2007 ends on 31 December 2007.

Vice President	L. Jin, Operations Group 1
Director General	R. Bestani, Private Sector Operations Department (PSOD)
Director	J. Yamagata, Infrastructure Finance Division 2, PSOD
Team leader	K. Fukaya, Senior Investment Specialist, PSOD
Team members	A. Akanda, Principal Safeguards Specialist, PSOD
	S. Gupta, Senior Economist, PSOD
	J. Munsayac, Senior Social Safeguards Officer, PSOD
	M. Pascua, Environment Officer, PSOD
	A. Reid, Consultant, Office of the General Counsel
	M. Starck, Investment Specialist, PSOD

CONTENTS


PHILIPPINES
ACQUISITION AND REHABILITATION OF MASINLOC COAL–FIRED THERMAL POWER PLANT
120°00'E
121°30'E
16°00'N
14°00'N
LA UNION
BENGUET
NUEVA VIZCAYA
Baguio
Lingayen Gulf
SAN MANUEL SUBSTATION
SUAL 2x600 MW BOT PROJECT
Sual
LABRADOR SUBSTATION
PANGASINAN
MASINLOC 2x300 MW PROJECT
Pantabangan
AURORA
NUEVA ECIJA
Cabanatuan
TARLAC
Concepcion
Botolan
ZAMBALES
SOUTH CHINA SEA
PAMPANGA
Mexico
BULACAN
SAN JOSE SUBSTATION
Olongapo
Hermosa
BATAAN
NATIONAL CAPITAL REGION
MANILA
Manila Bay
RIZAL
Balintawak
Malaya
QUEZON
Laguna De Bay
CAVITE
LAGUNA
Taal Lake
BATANGAS
Tayabas Bay
N
0 10 20 30 40 50
Kilometers
National Capital
Hydropower Plant
Geothermal Plant
Coal Thermal Plant
Oil Thermal Plant (retired or sold)
230-kV Substation
230-kV / 500-kV Substation
230-kV Transmission Line
500-kV Transmission Line
Provincial Boundary
Boundaries are not necessarily authoritative.
Note: The number of green lines indicates the number of circuits in transmission lines.
118°00'E
126°00'E
16°00'N
8°00'N
LUZON
Project Area
MANILA
VISAYAS
MINDANAO

07-3647 RM


119°00'E
125°00'E
16°00'N
8°00'N
MANILA
Project Area
Road
Transmission Line
Freshwater Pipeline
450.00
180.00
280.00
400.00
250.00
210.00
+14.00
Ash Disposal Aera
(V=6.2x10⁶m³)
+1.00
Sedimentation
Basin
300.00
+14.00
678.00
1,200.00
522.00
250.00
8.900
310.00
Cooling Water Outlet
500.00
535.00
635.00
Cooling Water Intake
240.00
Coal Unloading Jetty
PHILIPPINES
ACQUISITION AND
REHABILITATION OF MASINLOC
COAL–FIRED THERMAL
POWER PLANT
Oyon Bay
N
National Capital
Ash Disposal Area
Power Plant

07-3647c RM

THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan, without government guarantee, to Masinloc Power Partners Company Limited (MPPC) for the acquisition and rehabilitation of the Masinloc coal-fired thermal power plant (Project).

I. INTRODUCTION

2. The 600 megawatt (MW) Masinloc coal-fired power plant is one of the generation assets of the National Power Corporation (NPC) of the Philippines targeted for privatization (with a combined capacity of 4,336 MW). NPC is a state-owned vertically integrated electricity utility, which has now been unbundled. The Masinloc plant was constructed in the 1990s with public sector loans from Asian Development Bank (ADB) and Export-Import Bank of Japan (now Japan Bank for International Cooperation).

3. On 26 June 2001, Republic Act No. 9136, otherwise known as the Electric Power Industry Reform Act of 2001 (EPIRA), became law. EPIRA provides the legal basis and framework for restructuring the Philippine electricity sector. The goals of the restructuring under EPIRA are to promote competition and efficiency in the sector in order to reduce power rates, improve nationwide electrification levels, enhance the inflow of private capital, and broaden the ownership base of the power generation, transmission, and distribution sectors so they can meet projected increases in the demand for power. EPIRA created the Power Sector Assets and Liabilities Management Corporation (PSALM) to privatize certain generating assets of NPC. EPIRA's target was to privatize 70% of NPC's eligible capacity in Luzon and Visayas by June 2004, but to date only eight hydropower plants, with a combined capacity of 475 MW, have been auctioned off for $664 million (11% of the eligible capacity).[1]

4. The original intention was for the Masinloc plant to be the first major facility to be privatized and the plant was put out to an international tender in December 2004. The bid was won by YNN Pacific Consortium, a joint venture between YNN Holdings of the Philippines and the Australia-based Great Pacific Financial Group, for $562 million. However, in the absence of power purchase agreements and a perceived uncertainty in the regulatory and market environment, YNN was unable to secure financing even for the down payment of 40% of the acquisition price and the bid was declared a failure in August 2006.[2] The 600 MW Calaca coal-fired power plant was also put out to a tender in April 2006 but that tender also failed.[3]

5. With one year's operating track record of the wholesale electricity spot market (WESM), the Masinloc plant was again put out to tender in July 2007. There were six bidders[4] and AES Corporation (AES) of the United States, through its subsidiary Masinloc Power Partners

---

[1] The first five of these were small plants, the sixth was a 112 MW plant, and the seventh was the 360 MW Magat plant, acquired in April 2007 by SN Aboitiz Power, a joint venture between SN Power Invest of Norway and Aboitiz Equity Venture of the Philippines. A long-term debt of $380 million was arranged for Magat with International Finance Corporation, Nordic Investment Bank, and other foreign and local banks in October 2007.

[2] Apart from YNN, First Generation Holdings was the only other bidder.

[3] The Calaca bid was declared a failure because the best offer ($177 million) did not meet the reserve price ($288 million). Although Calaca had a power purchase agreement for 100 MW, this was not enough to ensure a higher bid.

[4] Other bidders were: First Generation Holdings of the Philippines, Ranhill of Malaysia, Suez-Tractebel of Belgium, International Power of the United Kingdom, and Shenhua of the People's Republic of China (PRC).

Company Limited (MPPC), won the award at $930 million.[5] Since the announcement of the second tender of the Masinloc plant, ADB was approached by several of the bidders with regard to financial assistance. In anticipation of a request for financial assistance from the winning bidder, ADB circulated a draft concept clearance paper for interdepartmental comments on 16 July 2007. When the winning bid was announced and MPPC confirmed its interest in receiving financial support, the concept clearance paper was finalized and approved by Management on 13 August 2007.

II. BACKGROUND

A. Power Sector

1. Demand and Supply

6. The Philippine power system is divided into three major grids: Luzon, Visayas, and Mindanao. The Luzon grid, with a total installed capacity of 12,092 MW, is the largest of the three and accounts for 73% of the demand. The largest load center in the country is the Metro Manila area, representing close to 65% of national electricity sales. The Philippine system is relatively well diversified in terms of the fuel sources (Table 1).

Table 1: Installed Capacity in the Philippines and Luzon by Fuel Source in 2006

Fuel	**Installed Capacity in the Philippines** (MW)	**%**	**Installed Capacity in Luzon** (MW)	**%**
Coal	4,177	26	3,769	31
Diesel/oil	3,602	23	2,333	19
Hydro	3,257	21	2,247	19
Natural gas	2,763	17	2,763	23
Geothermal	1,978	13	954	8
Nonconventional	26	0	25	0
Total	**15,803**	**100**	**12,092**	**100**

MW = megawatt.
Source: Department of Energy, Power Statistics.

7. In terms of the ownership, the Government's share (plants owned by NPC) is low at 26% with 74% owned by independent power producers (IPPs) and others (Table 2). However, effective control over many IPP assets lies with NPC or Meralco because of the power purchase agreements (PPAs) that they have with NPC or Meralco.

[5] There was a second tender for Calaca in October 2007 and this was won by Suez-Tractebel for $787 million over two other bidders, AES and First Generation Holdings. Once the Masinloc and Calaca sales are complete, PSALM will have successfully bid out 10 of the 31 plants identified for privatization. This translates to 1,681 MW in capacity, or 39% of the 4,336 MW total capacity of all NPC plants in Luzon and the Visayas.

Table 2: Installed Capacity in the Philippines and Luzon by Ownership in 2006

Ownership	Installed Capacity in the Philippines (MW)	%	Installed Capacity in Luzon (MW)	%
NPC	4,173	26	2,469	20
IPP with PPAs with NPC	8,113	51	6,669	55
IPPs with PPAs with Meralco	2,304	15	2,304	19
Others	1,213	8	649	5
Total	**15,803**	**100**	**12,092**	**100**

IPP = independent power producers, Meralco = Manila Electric Company, MW = megawatt, NPC = National Power Corporation, PPA = power purchase agreement.
Source: Department of Energy, Power Statistics.

8. In 2006, the dependable capacity in Luzon (10,576 MW) exceeded the peak demand (6,728 MW) by 57% and the required capacity[6] (8,302 MW) by 22%.[7] The Department of Energy (DOE), however, estimates that energy consumption in Luzon will increase at an average rate of 4.0% per annum. Given the retirement of two major power plants[8] scheduled in 2009–2010 and the construction of only 38 MW of committed projects, DOE projects that the Luzon grid will need about 1,950 MW of additional generating capacity by 2014 (Table 3). If no additional capacity comes onstream,[9] the critical period in the Luzon grid will be in 2011 when the reserve margin falls below the required level. DOE estimates that roughly P71.0 billion ($1.7 billion) is needed to finance the additional capacity required in Luzon.

Table 3: Supply and Demand Projection in Luzon 2006–2014 (MW)

Item	2006	2007	2008	2009	2010	2011	2012	2013	2014
Committed Capacity Addition	0	0	8	30	0	0	0	0	0
Retiring Capacity	0	0	0	0	100	650	0	0	0
Dependable Capacity (DC)	10,576	10,576	10,576	10,584	10,514	9,864	9,864	9,864	9,864
Peak Demand (PD)	6,728	6,981	7,252	7,552	7,878	8,225	8,596	8,990	9,397
Surplus (S=DC-PD)	3,848	3,595	3,324	3,032	2,636	1,639	1,268	874	467
Reserve Margin (S/PD)	57%	52%	46%	40%	34%	20%	15%	10%	5%
Required Capacity (PDx123.4%)	8,302	8,614	8,949	9,319	9,721	10,150	10,607	11,093	11,596
Indicative Capacity Requirement	0	0	0	0	150	450	450	600	600

MW = megawatt.
Source: Department of Energy modified by Asian Development Bank staff to highlight key points.

[6] Required capacity refers to the peak demand plus the reserve margin approved by the Energy Regulatory Commission above the peak demand of 23.4%, consisting of a 2.8% load following and frequency regulation, 10.3% spinning reserve, and 10.3% back-up.

[7] However, the net reserve margin computed from the actual available capacity was less than the reported reserve margin after adjusting for hydropower capacity and fuel supply and transmission constraints.

[8] The power plants scheduled for retirement are Hopewell gas turbine power plant (dependable capacity of 100 MW) and the Malaya oil thermal power plants (dependable capacity of 650 MW).

[9] The Power Development Plan assumes that roughly 1,750 MW from three power plants will be commissioned by 2009–2010. This remains indicative as construction has not started on any of the plants (San Gabriel, Ilijan gas-fired expansion, and GN Power coal-fired).

2. Regulation

9. From 1993 to 2001, the Energy Regulatory Board (ERB) regulated NPC and the distribution utilities. Under the EPIRA, industry regulation became the responsibility of the Energy Regulatory Commission (ERC). New functions and responsibilities have been introduced, including: (i) developing and enforcing technical standards for transmission and distribution; (ii) enforcing WESM rules; (iii) licensing generators and suppliers of electricity; (iii) setting a retail tariff for non-contestable sectors of the industry; (iv) determining and approving the level of the universal charge; (v) preventing abuse of market power and anti-competitive or discriminatory behavior by industry participants; and (vi) resolving disputes between industry participants or between industry participants and customers.

10. Since the beginning of WESM, apart from the tariff of NPC-owned plants under bilateral contracts, wholesale tariffs are no longer regulated. Retail tariffs are still regulated. Following the passing of EPIRA, the retail tariff was unbundled and all distribution utilities are required to file a petition with the ERC for the approval of unbundled rates. In the unbundled rates, generation, transmission, distribution, supply, and universal charges[10] are separately itemized on a customer bill and a change in a component is treated as a pass-through (although ERC approval is required to before the change can be reflected in customer bills). While rate unbundling was intended to be technically revenue neutral, the process has effectively involved a review of existing costs, and distribution rates have been revised (downward for some utilities) as a result.

11. The distribution business is still a largely regulated natural monopoly, and most retail users can purchase power only from distributors. Generators can sell only to either distribution utilities or to special economic zones. Distribution utilities may be private-investor-owned utilities (IOUs), electric cooperatives, or local government utilities. IOUs account for 77% of total electricity sales with the remainder coming largely from electric cooperatives. The largest distribution utility in terms of sales is Manila Electricity Company (Meralco). When retail competition is implemented (expected about 2011 or later), the retail tariff to contestable customers[11] will cease to be regulated.

3. Issues and Sector Reform

12. **High Electricity Price.** Electricity in the Philippines is among the most expensive in the world. Given excess capacity, efficient generation prices should approximate the fuel costs of the marginal generator. In power markets that do not levy differential environmental taxes on different fuel sources, direct cost considerations would dictate that gas plants be utilized to meet peak demand, while base load be met by coal, hydropower, or geothermal power, since these are the plants with lower economic fuel costs. Given that 60% of the installed capacity in the

[10] The universal charge is a component of the retail tariff that is meant to recover (i) environmental protection costs, (ii) rural electrification costs, and (iii) NPC's "stranded costs" (i.e., the take-or-pay capacity payments under the PPAs) and "stranded debt". Currently, the universal charge is set to cover the first two components only. Spot electricity price data suggest that the generation cost component of the retail tariff incorporates part of the stranded costs of NPC. However, the stranded debt is not reflected in any component of the tariff.

[11] Contestable customers will be initially defined as those end-users with a monthly average peak consumption of at least 1 MW. Under open access, contestable customers are allowed to choose their electricity supplier, who buys or generates the electricity, which distribution utilities will be compelled to deliver over their lines. End-users will pay the distribution and transmission companies all other incidental charges at regulated rates. Over time, the definition of contestable customers will gradually be expanded to include smaller consumers, ultimately extending to the household level. Uncontestable customers are end-users that must still buy power from the generator or supplier their local distribution utility chooses to contract with.

Philippines is coal, hydropower, and geothermal, one would expect gas plants to be the marginal generator. However, the opposite is occurring: most gas-fired power plants in the Philippines are base-loaded and coal plants are on the margin most of the time. Further, electricity prices are much higher than the cost of generation. Operating and price data show that the Philippine power prices are determined by institutional and financial arrangements, not economic forces.

13. Power purchase agreements (PPAs) are the main driver of high electricity costs in the Philippines. Power generation and transmission was a virtual monopoly for NPC until the power capacity shortage in the early 1990s forced the Government to enter into contractual arrangements with independent power producers (IPPs). The Build-Operate-Transfer (BOT) Law provided the legal mandate and paved the way for NPC and eventually for private distribution utilities to source power from IPPs through PPAs. PPAs continued to be signed even after the power crisis was resolved in 1993, as NPC built excess reserves in light of positive economic growth projections. However the Asian financial crisis suppressed economic growth and reduced electricity demand, leading to a significant surplus of power generating capacity, especially in Luzon. Installed capacity nationwide reached 15,803 MW in 2006 against the peak demand of 10,749 MW. Installed capacity in Luzon was 12,092 MW in 2006 against the peak demand of 6,728 MW. Today, there are 61 IPPs in total, representing 72% of the total installed capacity of the country. Of these, 35 IPPs (8,141 MW) have PPAs with NPC, and 3 IPPs (2,304 MW) have PPAs with Manila Electric Company (Meralco) with varying tenor and take-or-pay levels.[12] About 53% of installed capacity nationwide is subject to PPAs with take-or-pay clauses that cover at least 73% of capacity for the next 15 years or so.

14. The PPAs exert three distinct upward pressures on prices. First, take-or-pay capacity payments to IPPs imply that the nonfuel costs of electricity must be recovered even when power is not being generated. NPC and distribution utilities such as Meralco are largely permitted to cover their take-or-pay liabilities by passing these costs on to the end users.[13] Second, the PPA prices are high by industry standards.[14] Third, and less widely recognized, the PPAs and cross-ownership of generation and distribution severely distort the fuel mix, so that higher-cost gas plants are frequently run while lower cost plants (coal, geothermal, and hydropower) sit idle.

15. **Sector Reform**. To lower the electricity price, the Government embarked on market-oriented reform program and in June 2001 EPIRA became law. The reform plan embodied in EPIRA mandated a radical restructuring and includes the following actions:

(i) creation of PSALM to take ownership of and manage the orderly privatization of NPC's generation and transmission assets;
(ii) creation of WESM to provide competition in the wholesale electricity market;
(iii) abolition of ERB and the creation of a more robust and more independent ERC with the power to set tariffs in the noncompetitive transmission and distribution

[12] Others IPPs either have PPAs with other buyers or sell on a merchant basis.
[13] NPC's obligations arising from these PPAs amounted to P596 billion in 2005, representing more than half of its P1.07 trillion total liabilities. NPC's total liabilities account for about a third of the country's public sector debt, and P200 billion of these liabilities have already been absorbed by the Government.
[14] The initial PPAs were negotiated when the country was facing severe power shortages, which explains the higher prices; however, the same cannot be the case for the more recently negotiated PPAs. PSALM has renegotiated the PPA price with 25 of the 35 IPP contracts as of May 2007 with six having expired during the renegotiation process and four left to be finalized. One PPA was cancelled because the associated plant was never built. These renegotiations and the cancellation resulted in about $1.03 billion worth of total avoided costs (or reduction in stranded contract costs) in present value terms. However, the net impact on electricity prices was minimal and only limited relief was achieved.

subsectors and with wide-ranging powers to regulate the behavior of participants in all sectors of the industry; and

(iv) development, subject to certain conditions, of competition in the retail supply of electricity, starting with large electricity users and eventually extending to the supply of electricity to the household level.

16. After 6 years of EPIRA, the power sector is still struggling to implement these changes as described below.

17. **Generation Assets.** In the generation sector, PSALM's original target for power plant privatization was to have 70% of NPC's eligible assets in Luzon and Visayas (totalling 4,336 MW) privatized by June 2004. Privatization got off to a slow start but has gained momentum since late 2006. During late 2006 and 2007, PSALM succeeded in selling eight hydropower plants totalling 475 MW (11% of the target) for $664 million. The Masinloc power plant is the ninth and the largest power plant offered for privatization.

18. The installed capacity and power generation in Luzon by ownership is shown in Table 4. While the share of IPPs is 80%, most of the IPP generating capacity is contracted with NPC or Meralco through PPAs. This means is that the Luzon power generation market (WESM) is controlled by three dominant players (NPC, PSALM, and Meralco) on the supply side with only a 5% market share held by independent players. Some companies operate on both sides of the market. Acquisition of Masinloc by AES is another step, following the earlier privatization of eight hydropower plants, in further diversifying the generation market.

Table 4: Installed Capacity and Generation in Luzon by Ownership in 2006

Ownership	Installed Capacity (MW)	%	Generation (GWh)	%
NPC	2,469	20	10,547	26
IPP with PPAs with NPC (administered by PSALM)	6,669	55	15,698	38
IPPs with PPAs with Meralco	2,304	19	14,309	35
Others	649	5	688	2
Total	**12,091**	**100**	**41,242**	**100**

IPP = independent power producer, Meralco = Manila Electricity Company, MW = megawatt, NPC = National Power Corporation, PPA = power purchase agreement.
Source: Department of Energy, Power Statistics.

19. **Transmission Assets.** Transmission has now been spun off into a state-owned company called National Transmission Company (Transco). The Government has decided to privatize Transco by awarding a concession for the use of the transmission assets. However, several attempts to bid out the concession contract have failed. PSALM launched another round of bidding in July 2007 and the bids are expected in December 2007.

20. **Wholesale Electricity Spot Market.** WESM started operations in the Luzon grid in June 2006. It was designed to fulfill a wide range of objectives, the foremost of which is the promotion of competition in the generation sector. WESM is a mandatory gross-offer pool with net bilateral settlement and locational marginal pricing. All generators are required to offer into the market but may settle directly bilateral contracts (PPAs) that are registered with Philippine Electricity

Market Corporation (PEMC), the market operator.[15] Prices are based on the marginal generator. Of the total volume traded, 15-45% represent spot transactions and the rest represent bilateral transactions (under PPAs), depending on the month.

21. The system operator is part of Transco and is in charge of central dispatch and system stability. It schedules enough power generation to meet expected power demand throughout the day, with adequate reserve margins to take care of contingencies. All energy, including quantities sold through bilateral contracts, is dispatched by the system operator. Once the market operator has matched bids with expected demand and determined the market-clearing price, the market operator generates and forwards the dispatch schedule to the system operator for implementation. Participants settle their accounts by the hour once the system operator has informed them of the prices and schedules. The WESM market design was largely derived from the New Zealand market and is similar to the system in Singapore.

22. Spot market prices since the commencement of WESM have ranged between a high of P12/kWh and a low of P0/kWh,[16] averaging about P4.2/kWh.[17] WESM prices shot up from P2.72/kWh during the first trading month to P4.85/kWh in the third month. This led the PEMC to launch an investigation and to issue a report accusing PSALM of anti-competitive behavior.[18]

23. It is not surprising that spot prices have been high. As described above, WESM currently has only a limited number of participants, with three of them (NPC, PSALM, and Meralco) commanding market power.

24. As of September 2007, the load weighted average spot price at WESM was about P4.5/kWh. Although EPIRA did not stipulate any prerequisites for the launch of WESM, the expectations were that about 70% of NPC's generating assets would have been privatized by then. Even as privatization stalled, the Government went ahead with WESM. As a salve for the excessive market share of PSALM, the task of bidding to sell the capacity of NPC- contracted IPPs on WESM was delegated to four PSALM trading groups (now consolidated into three). The intention was that these groups would act independently with the objective of optimizing utilization and revenue from the plants. However, the extent to which these three teams act independently of each other has been questioned, as they are subject to PSALM's management authority and governance.

25. Recognizing this structural defect, PSALM is currently undertaking an initiative, with assistance from ADB and the World Bank, to appoint independent IPP administrators in an attempt to introduce more competitive players into the market. However, this initiative has already been under discussion for more than 2 years, with as yet little real progress. The design

[15] PEMC is a non-profit organization created by the Department of Energy to serve as an autonomous group market operator of WESM. It is governed by a Board of Directors consisting of representatives from the different sectors in the power industry: WESM, Transco, generators, and distributors. Neither the WESM rules nor EPIRA provided for a representative from end users of electricity except for representatives from economic zones and the semiconductor and electronics industries.

[16] For more than 15% of the year (from midnight to 6am), actual spot prices are essentially zero. This apparently counterintuitive result—that wholesale electricity is free at the margin—is a product of the gas-fired generators being on take-or-pay contracts. These generators pay for the gas whether they burn it or not, and so during periods of low demand are willing to offer their power at zero marginal cost. With most capacity sold to distributors on contract, however, average prices are well above zero. Thermal plants also have to maintain minimum running levels overnight if they are to be able to ramp up for the higher demands in the day time.

[17] These are daily average prices. On an hourly basis, the highest price exceeds P18/kWh.

[18] The matter was referred to ERC as an apparent abuse of market power. ERC launched its own investigation and concluded that there was no prima face case against PSALM and closed the investigation.

of the contractual arrangements with an independent administrator is likely to be complex, and rapid progress is unlikely. It has also been recognized that NPC's debt should not intervene in the price-making in the wholesale market. In a truly competitive market, the wholesale market price is determined by the marginal cost of generation for the marginal plant. NPC's "stranded costs" and "stranded debt" should ideally be recovered from the retail tariff. Steps have been taken to distinguish clearly the market price from the price of recovering the stranded costs and debt by unbundling the retail tariff into generation, transmission, distribution, supply and universal charges separately itemized on a customer bill. However, not all stranded costs or debts are reflected in the retail tariff at this point.

26. **Open Access and Retail Competition.** In 2007, ERC issued a resolution outlining a possible timeline toward open access. Open access means that third parties are allowed to use the transmission and/or distribution system and associated facilities of any distribution utility, subject to the payment of transmission and/or distribution retail wheeling rates duly approved by ERC. In effect, distribution utilities will no longer have the right to refuse the use by third parties of its distribution lines. This is a necessary condition for competition, among generators, distributors, and other forms of electricity suppliers, in the retail market.

27. Under Section 31 of EPIRA, ERC is only able to declare open access when a number of conditions have been met.[19] Among the most important of these are: (i) privatization of at least 70% of the total capacity of NPC generation assets in Luzon and Visayas; and (ii) transfer of the management and control of at least 70% of the total energy output of power plants under contracts with NPC to independent IPP administrators. In addition, ERC emphasized that it will consider the creation of the appropriate customer switching arrangements and the adequacy of the generation and transmission infrastructure in deciding on the date for open access. ERC must conduct a public hearing on whether all the necessary conditions have been met before declaring open access, and the initial stage of open access (for loads of 1 MW and above) will come into effect 6 months from the date of declaration. At this time, it is unclear when exactly open access will come into effect but the earliest estimate is 2011. While the requirement that 70% of NPC generation assets be privatized may be met as soon as early 2009, the procurement of the IPP administrators has not yet begun. This is a new concept in competitive power markets that has not been tested elsewhere in the world and it will take time for the market to understand the opportunities and the risks involved.

B. Asian Development Bank Operations

1. Country Strategy

28. ADB's country strategy and program (CSP) for Philippines[20] lists fiscal imbalance, a poor investment climate, and weak governance as the country's three most critical binding development constraints. The CSP developed a set of targeted sector policy reform packages, each of which is expected to have a direct impact on at least one of these constraints. The three reform areas are power, financial markets, and governance.[21] Improving the investment climate

[19] Initially, generators will be allowed to contract only with end-users of minimum 1 MW of demand. This will include ADB, whose peak demand is 3.8 MW.

[20] ADB. 2005. Philippines: *Country Strategy and Program (2005–2007).* Manila; and ADB. 2006. *Country Operations Business Plan Philippines (2007–2008)*. Manila.

[21] To further support the government's efforts to improve the fiscal situation and to broaden the reform program, ADB is providing a program cluster covering reforms in fiscal policy, governance in public financial management, the investment climate, and social inclusion. The first subprogram of the cluster was approved on 8 February 2007. ADB. 2007. *Report and Recommendation of the President to the Board of Directors on Proposed Program Cluster,*

is a focus of all proposed program lending operations and infrastructure weaknesses have been repeatedly identified by businesses as a key obstacle to investment in the Philippines. The Power Sector Development Program (PSDP) will have a direct impact on fiscal consolidation [22] by reducing the losses at NPC, enhancing the creditworthiness of PSALM and the energy companies, and creating conditions for the privatization of major power assets.[23] The CSP advocates more cooperation between ADB's public and private sector operations to enhance investor confidence and promote private investment critical to offset fiscally-constrained public investment. PSDP support for a well-regulated, privatized power sector, together with financial investments, will increase investor interest. A list of ADB's private sector operations in the Philippines is in Appendix 1.

2. Energy Sector Strategy

29. ADB's energy sector strategy[24] defines ADB's operational priorities as (i) reducing poverty by creating an energy infrastructure for sustainable economic growth; (ii) promoting private sector involvement by restructuring the energy sector and creating an enabling environment for private investors; (iii) addressing regional and global environmental impacts; and (iv) promoting regional cooperation. In particular, the strategy strongly encourages ADB interventions to increase private sector participation in the energy sector to take advantage of private operators' higher operational efficiencies and to respond to the large capital requirements of power projects. The strategy also encourages liberalization of markets and elimination of subsidies.

3. Consistency with Asian Development Bank Strategies

30. The Project is fully in line with ADB's country and energy sector strategies. It will directly contribute toward achieving the PSDP's objective of correcting the country's fiscal imbalance by catalyzing privatization of an NPC-owned power plant and bringing in sales revenues to the Government of $930 million. The Project will also help to improve the investment climate by increasing the reliability of generating capacity for commercial and industrial centers. Successful acquisition and operation of the Masinloc plant by a reputable foreign private sector will boost market confidence and encourage further privatizations of NPC's assets and the entry of new players in the market. The Project will enhance competition in the generator market and, in the long run, help to drive the electricity price down.

Loan, and Technical Assistance Grant to the Republic of the Philippines for the Development Policy Support Program. Manila. The second subprogram of this cluster is expected to be processed in early 2008.

[22] Footnote 12. Other ADB policy-based operations include the Local Government Finance and Budget Reform Program, the Financial Markets and Intermediation Program, the Microfinance Development Program, and the Justice Reform Program.

[23] Prior to the PSDP, ADB provided a $300 million loan and a $500 million partial credit guarantee under the Power Sector Restructuring Program. ADB. 1998. *Report and Recommendations of the President to the Board of Directors on a Proposed Loan and Technical Assistance Grants to the Republic of the Philippines for the Power Sector Restructuring Program.* Manila. To sustain progress achieved under this program, ADB provided technical assistance to strengthen the institutional capacity of the newly established ERC and facilitate the privatization of NPC. ADB. 2004. *Technical Assistance to the Republic of the Philippines for Institutional Strengthening of Energy Regulatory Commission and Privatization of National Power Corporation*. Manila.

[24] ADB. 2000. *Energy 2000: Review of the Energy Policy of the Asian Development Bank.* Manila.

III. THE PROPOSED PROJECT

A. Project Description

1. Current Status

31. The Masinloc power plant is a pulverized coal-fired power plant with a designed net capacity of 600 MW located in the town of Masinloc in Zambales province. It is about 250 kilometers (km) northwest of Metro Manila, 110 km northwest of Subic Bay and 30 km north of the provincial capital, Iba. The plant has two 300 MW generating units, which were constructed in phases by Mitsubishi Corporation of Japan under turnkey engineering, procurement, and construction contracts. Each unit has an identical drum-type force recirculation boiler supplied by Mitsubishi Heavy Industries (MHI). The steam turbine and generator systems were also supplied by MHI and the electrical generators were supplied by Mitsubishi Electric. The plant's onsite facilities include storage tanks for fuel oil, potable and raw water supply, a water-treatment plant, a coal stockyard, a coal crusher house, ash-handling and storage facilities, and the central control building.

32. ADB provided a public sector loan to NPC of $197 million approved on 13 October 1990[25] for the construction of unit 1, and another public sector loan of $162 million and a partial credit guarantee of Y12 billion approved on 2 November 1995[26] to cover additional costs of unit 1, construction of unit 2, and associated transmission facilities and activities. Unit 1 was completed at a total cost of $520 million and began commercial operations on 18 June 1998. Unit 2 was completed at a total cost of $167 million and began commercial operations on 10 December 1998. The plant has been operated to date by NPC. Power from the plant is transmitted to Metro Manila through the northern Luzon transmission corridor. ADB conducted a project performance audit review in May 2002[27] and concluded that the construction of the Masinloc plant was highly relevant to help address the country's severe power shortages. Although implementation was delayed,[28] the plant was seen as providing least-cost generation of electricity and at that time was deemed to be maintained in a satisfactory condition.

33. More recent data, however, indicate that the operating performance of the plant has declined since 2001 because of inadequate maintenance and insufficient capital investments in anticipation of the planned privatization. During 2001–2006, utilization of the Masinloc plant decreased from 76% to 45%. Almost none of its systems can operate at full capacity because of poor maintenance.[29] A lack of spare parts is a major concern for proper maintenance of the

[25] ADB. 1990. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and a Technical Assistance Grant to the Republic of the Philippines for the National Power Corporation for the Sixteenth Power (Masinloc Thermal Power) Project*. Manila. This loan was cofinanced by the Export Import Bank of Japan (J-EXIM, now Japan Bank of International Corporation).

[26] ADB. 1995. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Republic of the Philippines for the National Power Corporation for the Northern Luzon Transmission and Generation Project and Guarantee of a Bond Issue by the National Power Corporation*. Manila. This loan was cofinanced by J-EXIM, World Bank, KfW, and others.

[27] ADB. 2002. *Project Performance Audit Report on the Sixteenth Power (Masinloc Thermal Power) Project (Loan 1042-PHI) in the Philippines*. Manila.

[28] The 3.5 year delay was largely due to the longer than expected lead time for land acquisition. While the actual construction took shorter (39 months) than planned (42 months), the full output of unit 1 was not evacuated because of transmission line constraints. Unit 1 started to evacuate its output only in March 1999, when the 500 kilovolt (kV) transmission facilities (financed by ADB and cofinanciers under the Northern Luzon Transmission and Generation Project) were put into operation.

[29] The major operational problems have been the failure of the ship unloader, coal pulverizers, boiler feed pumps, ash handling system, and misalignment of the coal belt conveyor.

plant. Unit 1 had a major overhaul in 2005 (the first since commercial operations began in 1998) but there has been no major overhaul of unit 2. The plant's operations have been characterized by low capacity, poor availability, low reliability, and violations of environmental, health, and safety conditions. The plant's emissions are unable to meet dust emission limits at any load. The Masinloc operating statistics for units 1 and 2 combined for 1999–2006 are presented in Appendix 2.

2. Rehabilitation Plan

34. Upon takeover, MPPC plans a 2-year rehabilitation of the plant. The current capacity utilization is only 45%, but MPPC aims to raise the net output to 600 MW after the rehabilitation and to run the plant at 89% capacity utilization in ordinary years and 87% in major maintenance years (every 6 years). MPPC is also confident that the heat rate can be improved. The plant's useful life is 40 years upon acquisition and rehabilitation by MPPC.

35. The rehabilitation effort will focus on returning the existing plant systems to the original equipment manufacturer (OEM) specifications, particularly the environment-related components of the plant. The plant was originally properly engineered and constructed to meet technical and environmental performance requirements and there is little technological or environmental performance risk involved in returning the facility to its OEM specifications. Major plant operating repairs will be carried out on the safety devices and systems, the ash collection and transport system, and the boiler feed pumps and forced circulation pump. Major OEMs including MHI have already visited the Masinloc plant since MPPC won the bid. More details on the rehabilitation plan are contained in Appendix 3.

B. Management and Ownership

1. Borrower

36. MPPC is currently indirectly fully owned by AES. However, International Finance Corporation (IFC) has proposed taking a 6% partnership interest in MPPC and AES also plans to sell at a later stage 25-30% of its shares in MPPC to a local partner still to be identified.

37. MPPC will receive commercial, financial, and risk management support from AES Philippines Energy Supply Business (APESB), an energy marketing company established by AES. APESB will market the generation from Masinloc under bilateral contracts to customers, including distribution utilities, special economic zones, electric cooperatives, and large commercial and industrial customers so Masinloc will not sell only to the spot market. APESB will consist of sales and marketing, asset optimization, risk management, and billing and statements teams. The sales and marketing team will oversee all activities related to the sales and marketing of Masinloc's dispatch. The asset optimization team will carry out trading, scheduling, fuel procurement, and contract structuring.

2. Sponsor

38. AES Corporation, formed in 1981, is a Delaware holding company whose subsidiaries operate a portfolio of electricity generation and distribution businesses in 27 countries. It is one of the world's largest global power companies with 2006 revenues of $12.3 billion and 32,000 employees. AES has an ownership interest in assets with a combined generating capacity of over 43,000 MW. Its 13 distribution companies serve 11 million retail customers and had sales of over 73,000 GWh in 2006. AES is listed on New York Stock Exchange. It is rated BB- by

Standard & Poor's and B1 by Moody's. Apart from generation and distribution, AES is engaged in related activities that include alternative energy businesses such as wind generation, the supply of liquefied natural gas to targeted North American markets, greenhouse gas reduction activities, and related industries, involving environmental issues and the application of new energy technologies.

39. In generation, AES is engaged in both contract and competitive supply businesses. AES's contract generation businesses own and operate plants that sell electricity and related products to utilities or other wholesale customers under long-term contracts. The company's contract generation facilities generally limit its exposure to commodity price risks, electricity price volatility, and often to volume risk by entering into power sales agreements of 5 years or longer for 75% or more of its output capacity. AES's competitive supply (merchant generation) businesses own and operate plants that sell electricity to wholesale customers in competitive markets. These plants typically sell into local power pools under short-term contracts (less than 5 years) or into daily spot markets. AES was one of the first entrants into the merchant power business, which it joined in 1996. This part of AES's business now consists of 27 power generation facilities with a total capacity of 13,000 MW[30] located in Argentina, Colombia, Hungary, Kazakhstan, Panama, United Kingdom, and USA (the list of all merchant power plants of AES is in Appendix 4). The merchant power business comprises about 32% of AES revenues. AES manages merchant risks through various mechanisms, depending on the nature of the business and the markets in which the business is operating.

C. Implementation Arrangements

1. Asset Purchase Agreement

40. MPPC will acquire the assets of the plant from PSALM under an asset purchase agreement (APA) dated 26 July 2007. Under the APA, MPPC is required to pay at least 40% of the purchase price upon satisfaction of certain conditions precedent, and following the payment of such portion of the purchase price (the closing date) will be granted possession of, and assume rights and liabilities pertaining to, the purchased assets. MPPC will obtain title to the purchased assets upon the execution of the deed of absolute sale by PSALM, which PSALM is obliged to complete within 30 days from the payment of the entire purchase price. The remaining 60% of the purchase price is payable over a period of 7 years in 14 semi-annual installments if MPPC opts to pay the purchase price in installments.

41. The project site consists of onshore lands and foreshore lands. The plant stands on the onshore lands consisting of 138 hectares (ha) of "leased premises" and 11 ha of "reclaimed land". Coal-handling jetties and a discharge channel stand on 6 ha of "foreshore lands". MPPC will rent the leased premises from PSALM in accordance with the LLA. Under the APA, PSALM is obliged to acquire a transferable right (i.e., a rental right), title or ownership over the reclaimed land that will enable it to be included as part of the leased premises within 7 years from the closing date. The reclaimed land is currently in the public domain but is scheduled to be converted into private land by a presidential promulgation and acquired by PSALM. Once PSALM acquires such transferable right or title, the reclaimed land will be included as part of the leased premises and therefore be leased to MPPC under the LLA and can be included in the purchase option exercisable by MPPC. PSALM is also obliged under the APA to acquire a

[30] While this capacity is located in countries with competitive electricity markets, not all of it is traded on a merchant basis. Like the Philippines' WESM, these markets also use bilateral contracts. Of AES's total capacity of 13,000 MW, about 10,750 MW is sold under short-term PPAs (less than 5 years) or on a merchant basis, and the rest is sold under longer-term PPAs.

transferable right over the foreshore lands within 7 years from the closing date. The foreshore lands are also in the public domain. Because they are natural resources, even PSALM cannot acquire title to the foreshore lands. The foreshore lands will continue to be owned by the Government and will be leased to PSALM, upon which PSALM will sublease the lands for use by MPPC.

2. Land Lease Agreement

42. MPPC will lease the leased premises from PSALM under the LLA, dated 26 July 2007. MPPC can lease the site for 20 years, with an option to extend for the lesser of 10 years or the remaining corporate life of PSALM, upon mutual agreement. MPPC has the right to acquire the leased premises (except for the foreshore lands and with respect to the reclaimed lands, subject to PSALM including the reclaimed lands in the option) once PSALM completes the acquisition of title to the land.

3. Power Sales

43. For the Masinloc plant, NPC has executed PPAs with 12 customers totaling 264 MW equivalent of supply volume (44% of total stated capacity). These PPAs will be transferred to MPPC along with the plant. Electric cooperatives represent 75% of these customers and the rest are special economic zones and industrial parks. In terms of the supply volume, 33% of these contracts will expire within 2007, 51% in 2008, 6% in 2009, and 10% in 2010. AES plans to sell Masinloc's output both on a bilateral contract basis and in the spot market.

4. Coal Supply

44. Currently, the Masinloc plant is fueled by coal the Government buys under supply contracts with Australia and the People's Republic of China (PRC). AES management believes some cost reductions could be made immediately by simply making coal supply practices conform to AES's global norms. Cost reductions would not only improve plant profitability, but should be enough to drop Masinloc below other coal-fired plants in the merit order, giving it the ability to bid less than other plants and dispatch considerably greater quantities of power than previously. MPPC's coal will be procured by APSEB, which will coordinate with AES's global fuel procurement teams when negotiating with global coal suppliers in order to achieve competitive terms.

5. Transmission

45. The Masinloc plant is connected to the transmission grid via an 89-km double-circuit 230 kilovolt (kV) transmission line to the Labrador substation. Power evacuation from Masinloc is possible via four major transmission corridors.[31] The total combined capacity of these four

[31] These are (i) the 500 kV double-circuit Labrador—San Manuel—San Jose transmission line, (ii) the 230 kV single-circuit Labrador—Botolan—Hermosa—Balintawak transmission line, (iii) the 230 kV mostly single-circuit San Manuel—Pantabangan—Cabanatuan—Mexico—Balintawak transmission line, and (iv) 230 kV single-circuit San Manuel—Conception—Mexico—Talintawak transmission line. Of these, (i) was financed by ADB (ADB. 1995. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the National Power Corporation and a Technical Assistance Grant to the Republic of the Philippines for the Northern Luzon Transmission and Generation Project in the Republic of the Philippines and a Proposed Guarantee of a Bond issue by the National Power to Provide Cofinancing for the Project*. Manila) and the upgrade of (ii) is being financed by ADB (ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the National Power Corporation for the Electricity Market and Transmission Development Project and Technical Assistance Grant to the Republic of the Philippines for the Transition to Competitive Electricity Market.* Manila).

corridors is 6,100 megavolt-ampere (MVA) and they allow the Masinloc plant to dispatch its full load to the grid. No transmission constraints are expected.

6. Operation and Maintenance

46. Following its normal practice, AES will operate the plant in-house, with technical support from its central engineering department as necessary.

D. Environmental and Social Aspects

47. The Masinloc plant is located within Barangay Bani, in the municipality of Masinloc,[32] a site that has been zoned as industrial by the Government. The project site consists of 149 ha of onshore and reclaimed lands and 6 ha of foreshore lands. Onsite plant facilities include storage tanks for fuel oil, potable and raw water supply, a water-treatment plan, coal stockyard, and coal crusher house, ash-handling and storage facilities, and the central control building. Offshore facilities include coal-handling jetties and a discharge channel.

1. Environment

48. When ADB processed its loan to unit 1 of the plant in 1990, there was no environmental categorization system in place. NPC, in coordination with Electric Power Development Company of Japan, prepared the environmental impact assessment (EIA) for both units in 1990. ADB assisted NPC in the preparation of an environmental management plan and system through technical assistance.[33] When ADB processed its loan to unit 2 in 1995, the plant was assigned environmental category A based on a review of the original EIA and the environmental issues and mitigation measures for unit 1, which was then under construction.

49. In acquiring the plant, MPPC carried out an environmental performance audit through a consulting firm, Environmental Resources Management (ERM). ERM identified significant environmental issues, related to (i) air emissions; (ii) wastewater, (iii) storm water and drainage; (iv) materials handling and storage; (v) waste management; (vi) marine ecological impacts; and (vii) contaminated groundmass. An ADB due diligence mission visited the site and confirmed the ERM findings that the proposed rehabilitation measures reflected extensive maintenance needs, ranging from replacement of much needed spares to an overhaul of plant grounds and equipment. Based on ERM's findings, ADB and MPPC have agreed that the following areas need to be addressed urgently: (i) the electrostatic precipitator (to reduce the particulate matter emissions); (ii) wastewater and stormwater collection and treatment; and (iii) the ash management system. MPPC has prepared corrective action plans for these areas and these have been accepted by ADB. In addition, MPPC commits generally to bring the environment, health, and safety aspects of the plant up to AES's rigorous global standards. AES will apply key environmental standards for air emissions and wastewater discharges following national and World Bank standards. Masinloc will be required to implement the AES safety management system and to comply with AES safety standards. It will also be audited within 12 months of

[32] The land uses surrounding the site comprise: to the north, agricultural plantations, informal rural communities, and the Lauis River about 1 km from the site; to the east, rural communities and National Highway 3 about 1 km from the site; to the south, Oyon Bay, which is a fish sanctuary and a protected area; and to the west, the South China Sea. About 11 ha of land at the edge of the southern part of the site was reclaimed, reportedly using land based soils excavated locally.

[33] This technical assistance involved establishing an environmental baseline monitoring system for impacts during the operational phase; upgrading NPC's in-house capacity for environmental management; developing a strategy for fly ash utilization; examining the possibility of reducing oil dependence by rehabilitating and converting existing oil-fired units to coal-fired units.

takeover by MPPC and at least once in 3 years subsequently as part of the AES safety audit program. Implementation by AES of the environmental management plan, including the corrective action plans, will be monitored throughout the life of the ADB financing.

50. Based on the field visit, the review of the environment performance audit report, and the corrective action plans, ADB has classified the proposed Project as category B. The rehabilitation work by MPPC aims to bring the plant's operating and environmental performance back to the original design standards and does not involve any expansion or additional facilities. It will improve the operating efficiency, save coal, reduce carbon dioxide and other environmental emissions, and increase the health and safety standards of the plant. The environmental performance audit report and the corrective action plans are regarded as constituting the initial environmental examination (IEE) and is scheduled to be posted on the Asian Development Bank website on about 3 December 2007.

51. The Masinloc plant was accorded an environmental clearance by the Government in 1992 based on the original EIA. The Government has informed MPPC that no further EIA or environmental clearance is required before it takes over the physical assets, conducts extensive maintenance measures, and operates the plant. MPPC still needs to obtain or periodically renew certain routine and readily available environmental permits, including a permit to operate air pollution source and control installations, an offshore lease permit, and a reclamation permit. MPPC will regularly submit environmental monitoring reports to the Department of the Environment and Natural Resources.

2. Social Aspects

52. **Indigenous Peoples.** The Project has been categorized C with respect to its impacts on indigenous peoples. While Zambales is home to two indigenous groups, there are no people at the plant site. No ancestral domain claims have been reported for the lands occupied by the plant and at the resettlement sites.

53. **Involuntary Resettlement.** The Project has been categorized C with respect to the involuntary resettlement. The Project will not involve any land acquisition, change in land use, or access restriction. The plant site is fenced and there are no settlers inside the property. Before construction of the Masinloc plant, the plant area, consisting primarily of coastal community holdings, was planted with mangoes, paddy, and minor agricultural produce. In June 1996, about 2 years before the commissioning of the plant, NPC, in collaboration with the municipality of Masinloc, completed the relocation of 198 families living at the plant site. 105 families were relocated to a resettlement site in Barangay Taltal, 1.5 km away from their original settlement, and 93 families opted for self-relocation. A total budget of $25.75 million was allocated to these activities. In 2002, an ADB operations evaluation mission identified some unresolved issues, which were (i) disputes over compensation amounts and delayed transfer of land ownership, (ii) saline drinking water at the resettlement site, and (iii) limited job opportunities for project affected families.

54. NPC has been working to resolve these issues. Compensation has now been paid to all but one claimant (for whom final payment is being negotiated). The relocated families in Barangay Taltal received certificates of award for a 6 x 3 meter (m) housing unit on a 200 m^2 home lot. The judicial titling process for the ownership of resettlement lands is still ongoing. When the titling process has been completed, NPC will formally attach titles to the certificates of award. Marked improvements to the housing units and significant job creation were observed at the relocation site during the due diligence mission. The following civil works were carried out at

the relocation site: (i) construction of a seawall (riprapping) and a concrete pavement; (ii) rehabilitation of the water supply system; (iii) installation of water lines and a concrete cover for the existing canal; (iv) procurement of school equipment and construction of the concrete perimeter fence; (v) construction of a multi-purpose hall for senior citizens, a day care center and a health center; and (vi) installation of streetlights at the relocation site.

55. When it takes over the plant, MPPC will support continued implementation of community development activities in line with AES policy to support sustainable business practices in the communities in which it operates. In particular, MPPC will work closely with the multipartite monitoring committee (MPMC) comprising representatives of regulatory agencies, local government entities, and NPC, to ensure that the Masinloc plant continues to support local communities. Under the APA, MPPC is committed to adhere to the 2005 memorandum of understanding (MOA) signed by PSALM, NPC, and representatives of local governments. Under the MOA, MPPC as the owner of a privatized plant will recognize, support, and fully cooperate with MPMC to monitor Masinloc plant's compliance with environmental compliance certificate conditions and to address the social and environmental concerns of the people of Masinloc and Zambales. MPPC will give priority employment to qualified local residents, give the municipality of Masinloc preference, if qualified, in awards of plant-related contracts, and strictly observe and comply with its obligations to provide financial benefits to host communities as required by the regulations.[34] Furthermore, MPPC will implement and devise new socio-economic projects and public health monitoring along with annual medical, dental, and surgical missions.

E. Development Impact[35]

56. The Project aims to promote Philippines' sustainable economic development by providing revenues to the Government, improving the reliability, and reducing the cost of the electricity supply; and improving the investment climate. The acquisition and rehabilitation of the Masinloc plant (outputs) will improve operational efficiency and raise the environmental, health, and safety standards of an underutilized and poorly-maintained power plant to global standards (outcome). The Project will further the privatization of the Philippine power sector and result in a reliable and competitively-priced electricity supply that imposes a limited fiscal burden on the Government (impact). The design and monitoring framework and development effectiveness framework are in Appendix 5.

[34] Under EPIRA and DOE Energy Regulations (ER) No. 1-94, generation facilities owned by NPC transferred to PSALM and subsequently privatized are required to provide a P0.01/kWh financial benefit to host communities. Further, as per Republic Act 9136 and ER 1-94, P0.0025/kWh of the total electricity sales will be allocated as Development and Livelihood Fund for the resettlement areas.

[35] The development effectiveness of the Project will be assessed in terms of its contribution to private sector development, business success, and economic sustainability as per the guidelines for implementing the Good Practice Standards for Evaluation of Private Sector Investment Operations prepared by the Evaluation Cooperation Group of multilateral development banks.

F. Economic Evaluation

57. The economic analysis of the Project was carried out in accordance with ADB's *Guidelines for the Economic Analysis of Projects*. The Project is anticipated to provide a net benefit to the economy by reducing the national debt, replacing current generation with more efficient and environmentally-sound generation, adding new generation capacity, and increasing the overall competitiveness of the sector, resulting in lower electricity tariffs in the long term. The reduction in the national debt is assumed to be the difference between MPPC's payment for the assets and the depreciated economic value of the assets, adjusted for financing of the Project from domestic sources. Part of the electricity output from the Project will replace electricity already generated by Masinloc (the nonincremental portion) but the Project enable this to be generated in a more efficient manner. The remaining output will be new generation stemming from the implementation of MPPC's rehabilitation plan (the incremental portion). The benefit for the nonincremental portion is the opportunity cost the economy "saves" by not having to use more expensive electricity generated by less efficient plants. For the incremental portion, the benefit is calculated by valuing the additional electricity output from the Project at the projected WESM spot price. This market price reflects the consumers' willingness to pay for additional electricity, and hence is a good approximation of the benefit to the economy of Masinloc's added electricity generation. Environmental benefits are also expected from the Project but these have not been quantified in the analysis.

58. The economic internal rate of return (EIRR) under the ADB base case was estimated at 24.1%, which is above the social discount rate of 12%. Testing this under four adverse scenarios demonstrates that the Project is economically robust and viable.

IV. THE PROPOSED ASSISTANCE

A. Loan

59. The proposed ADB assistance is a direct loan of up to $200 million to MPPC without government guarantee. Upon or after disbursement of the loan, part of it may be converted, at MPPC's option, to pesos for a period which could be up to the maturity of the loan.

B. Justification

60. The Project merits ADB support for the following reasons.

(i) It will further the privatization efforts of the Government to promote competition and efficiency in the power sector and to put the sector on sounder financial footing. It will bring the percentage of NPC's privatized eligible assets to 25%, and this will increase to 39% once the Calaca sale is complete. The Project will bring in a new market player without vested interests and diversify the generation market. While the electricity market is projected to continue behaving in an oligopolistic manner initially, anticipated increases in the number of players in the market (through privatization, appointment of independent administrators for IPP plants, and new entrants) will increase competition and as a result electricity prices will tend toward the long run marginal cost. Proceeds from the sale of the Masinloc plant will be used to reduce NPC's stranded debt.

(ii) The Project will improve the operating efficiency of the plant and bring the plant's environmental, health, and safety standards up to global standards. The Masinloc plant is currently underutilized and violates environmental regulations.

(iii) The Project will embody ADB's country and energy strategies, which emphasize supporting energy infrastructure development with private sector participation. The Project will support ADB's thematic priorities of economic development, private sector development, good governance, and environmental protection. The Project will directly complement the Power Sector Development Program by catalyzing privatization of an NPC-owned power plant and bringing in sales revenues to the Government. The Project will also help to improve the investment climate by increasing the reliability of generating capacity for the country's economic center. Successful acquisition and operation of the plant by a reputed foreign private sector will boost market confidence and induce subsequent foreign investment.

(iv) ADB's involvement in the Project will catalyze long-term private sector equity and debt.

(v) The ADB loan will have a long tenor to ease the Project's cash flow and to mitigate the foreign exchange rate and interest rate fluctuation risk. In the long term, local-currency, fixed-rate financing will enhance the sustainability and affordability of the Project and reduce the mismatch between the currency of borrowing and the currency of revenues.

C. Anticorruption and Combating Money Laundering and the Financing of Terrorism

61. AES was advised of ADB's *Anticorruption Policy* (1998, as amended todate) and policy relating to the *Combating of Money Laundering and the Financing of Terrorism*. Consistent with its commitment to good governance, accountability, and transparency, ADB will require MPPC to institute, maintain, and comply with internal procedures and controls following international best practice standards for the purpose of preventing corruption or money laundering activities or the financing of terrorism and covenant with ADB to refrain from engaging in such activities. The financing documentation between ADB and MPPC will further allow ADB to investigate any violation or potential violation of these undertakings.

V. INVESTMENT LIMITATIONS

62. The proposed direct loan will, once approved, increase ADB's group exposure to the AES Group to $214 million, ADB's total nonsovereign exposure to the Philippines to 7.2% and that to the conventional energy generation (other than hydropower) subsector to 16.8%. The proposed financing is within ADB's aggregate, country, industry, group, and single exposure limits for non-sovereign investment.

VI. ASSURANCES

63. Consistent with the Agreement Establishing the Asian Development Bank, the government of the Philippines will be requested to confirm that it has no objection to the proposed assistance to MPPC. No funding will be disbursed until ADB receives such

confirmation. ADB will enter into suitable documentation, in form and substance satisfactory to ADB, following approval of the proposed financing by the Board of Directors.

VII. RECOMMENDATION

64. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and, acting in the absence of the President, under the provisions of Article 35.1 of the Articles of Agreement of ADB, I recommend that the Board approve the proposed loan to Masinloc Power Partners Company Limited for the acquisition and rehabilitation of the Masinloc coal-fired thermal power plant of up to $200,000,000 funded from ADB's ordinary capital resources on terms and conditions as are substantially in accordance with those set forth in this report and as may be reported to the Board.

Liqun Jin
Vice President

29 November 2007

ASIAN DEVELOPMENT BANK PRIVATE SECTOR OPERATIONS IN THE PHILIPPINES

($'000)

Investment No.	Company	Equity and Line of Investment	Ordinary Capital Resources	Complementary Loan	Guarantee	Combined Total	Date of Approval
7008	Planters Development Bank	0.495				6.857	25 Nov 1986
		0.351					09 Dec 1991
7020/885	Philippine Long Distance Telephone Co.		24.000			24.000	29 Mar 1988
7025	H&Q Philippine Ventures	2.500				2.500	15 Sep 1988
7036	Planters DB Leasing Corp.	0.370				0.370	03 Aug 1989
7043/0991	Mirant Navotas Corp. (formerly Hopewell Energy (Philippines) Corp.)	1.100	10.000			11.100	23 Nov 1989
7059	BPI/PCICC	4.000				4.000	11 Oct 1990
7064	Asiatrust Development Bank	0.536				0.536	06 Dec 1990
7065/1065	Avantex Mill Corp.		8.000	5.000		13.000	11 Dec 1990
7069/1085	Shemberg Biotech Co	0.659	4.800			5.459	06 Jun 1991
7071/1093	Marcopper Mining Corporation		15.000			15.000	08 Aug 1991
7071/1093	Marcopper Mining Corporation			25.000		25.000	15 Oct 1992
7089/1230	Mirant Pagbilao Corporation	10.000	40.000			50.000	18 May 1993
7090/1231	Batangas Power Corp.	3.000	26.500			29.500	18 May 1993
7092/1252	Bukidnon Resources Co. Inc.	0.300				0.300	20 Dec 1994
7092/1252	Bukidnon Resources Co. Inc.	0.900	4.600			5.500	21 Sep 1993
7095/1263	Primo Oleochemicals Inc.	3.000	15.000	7.500		25.500	09 Nov 1993
7106	Walden AB Ayala Ventures Co. Inc.	2.892				2.892	27 Oct 1994
7107	Walden AB Ayala Management Co. Inc.	0.031				0.031	26 Jul 1995
7107	Walden AB Ayala Management Co. Inc.	0.019				0.019	27 Oct 1994
7125	Mutual Fund Co. of the Philippines Inc.	3.850				3.850	09 Apr 1996
7145/1614	Primo Oleochemicals Inc.	2.842	2.120			4.962	14 Apr 1998
7145/1616	Primo Oleochemicals Inc.		2.301			2.301	14 Apr 1998
7145	Primo Oleochemicals Inc.			1.077		1.077	
7154/1696	Maynilad Water Services[a]		45.000	120.000		165.000	14 Sep 1999
7155/1722	Philippine International Air Terminals Co. Inc.		40.000			40.000	17 Dec 1999
7162/1769	Manila North Tollways Corporation		45.000	25.000		70.000	06 Oct 2000
7191/2077	PS Peso Swap and Financing Project[a]		200.000			200.000	13 Jan 2004
7193	LGU Guarantee Corporation		2.000			2.000	19 Jan 2004
7206	Balikatan Housing Finance, Inc.		29.237			29.237	17 Dec 2004

Investment No.	Company	Equity and Line of Investment	Ordinary Capital Resources	Complementary Loan	Guarantee	Combined Total	Date of Approval
7221	Bahay Financial Services	0.164				0.164	17 Dec 2004
7212/2173	Cameron Grandville Asset Management Inc. (formerly Equitable PCI NPA Acquisition)		5.000			5.000	24 Jun 2005
7218	PCG Facility and Credit Information Bureau (formerly SME Enterprise Development Support Project)	1.000			18.400	19.400	29 Sep 2005
	Total	**38.009**	**518.558**	**183.577**	**18.400**	**764.5**	

ADB = Asian Development Bank, BPI/PCICC = Bank of the Philippine Islands and PCI Capital Corporation, LGU = local government unit, NHMFC = National Home Mortgage Finance Corporation, NPL = nonperforming loan, PCG = partial credit guarantee, PDB = Planters Development Bank.

[a] Cancelled.

Source: Asian Development Bank.

MASINLOC OPERATING STATISTICS, 1999–2006

Parameter	1999	2000	2001	2002	2003	2004	2005	2006
Net generation (GWh)	1,935.70	2,853.60	3,694.40	3,224.50	2,251.50	2,866.30	2,492.20	2,141.40
Availability (%)	58.4	59.8	81.0	74.0	67.1	57.5	50.1	48.6
Capacity factor (%)	39.8	67.0	75.5	68.8	47.0	59.1	51.2	44.8
Forced outage rate	18.9	24.8	1.	2.	0.	3.	8.	2.
Heat rate (BTU/kWh)	9,773.00	9,255.00	9,383.00	9,720.00	9,758.00	10,090.00	9,930.00	10,537.00
Avg. load (MW)	488.15	523.09	516.81	469.35	406.07	420.01	478.25	327.66
Operating hours	8,519.00	11,867.00	15,336.00	14,861.00	11,961.00	14,903.00	11,292.00	13,615.00

BTU = British thermal unit; GWh = gigawatt-hour; KWh = kilowatt-hour; MW = megawatt.
Source: PB Power. 2007. *Masinloc 600 MW Coal-Fired Power Plant Independent Technical Assessment Report*. Singapore (11 October).

REHABILITATION PLAN FOR THE MASINLOC POWER PLANT

1. The 600 MW pulverized-coal electric generation facility in Masinloc, the Philippines, has been systematically deteriorating since 2004 because of the inability of the plant personnel to procure spare parts and/or perform equipment repairs. The current management has not approved funds for parts and/or repairs, so plant personnel have been forced to maintain operations with whatever resources are at hand. Spare parts have been depleted and critical equipment essential to reliable plant operation cannot be repaired.

2. The plant refurbishment effort by Masinloc Power Partners Company Limited (MPPC), the new owner of the plant, will focus on returning the existing plant systems to the original equipment manufacturer (OEM) specification. The facility was originally properly engineered and constructed to meet environmental and technical performance requirements and there is little technological or environmental performance risk involved in returning the facility to its OEM specifications. Replacement equipment lead times and the availability of equipment technical specialists have been studied carefully as a part of the refurbishment effort.

3. The major plant operating repairs will be completed for three critical systems as soon as practical upon the take over by MPPC. These are: (i) identification and repair of safety devices and systems, (ii) repair of ash collection and transport systems, and (iii) repair or replacement of the boiler feed water feed pump and forced circulation pump. Coal ship unloading facilities and reclaimers will be repaired as soon as the facility is transferred to MPPC. The current condition of these systems is causing extreme delays in unloading ships, resulting in excessive demurrage charges as well as the loss of coal to uncontrolled spontaneous combustion. Numerous other noncritical repairs to various plant systems will also be required.

4. Critical rehabilitation activities to be undertaken by MPPC include the following:

(i) coal ship unloading system,
(ii) heavy equipment,
(iii) fly ash removal and transport systems,
(iv) boiler feed pumps,
(v) forced circulation pumps,
(vi) boiler tube condition,
(vii) soot blowing system,
(viii) coal pulverizers, and
(ix) electrostatic precipitator.

5. Since winning the tender, MPPC has been working with the OEMs to ascertain their views on the state of the equipment at the plant and to start discussions for their rehabilitation.

6. The following OEMs have visited Masinloc since AES has won the bid:

(i) MHI and Mitsubishi – about 10 specialists covering all sections of plant,
(ii) MELCO (a division of Mitsubishi) for electrical supplies by MHI,
(iii) Flow-serve for boiler feed pumps,
(iv) TechInt for coal handling plant including stacker reclaimers,
(v) Macgregor for coal un-loaders,
(vi) United Conveyors Corporation for ash-handling systems,
(vii) the OEM for steam bypass systems,
(viii) Siemens for the chlorination system, and
(ix) GE for electrostatic precipitator services.

7. MPPC is currently reviewing the reports of these visits and obtaining quotations from the various OEMs. Material will then be sourced using the global sourcing expertise of MPPC's parent company, AES Corporation.

8. A senior member of staff from AES headquarters will support the process and will operate out of the Philippines during this period. Several quotations have already been received and are being processed. AES's experience in turning around similar plants and its global relationships with key OEMs is helping it to achieving faster delivery times and higher quality service.

AES MERCHANT POWER BUSINESS

Location	Facility	Fuel	Year of Acquisition/ Commencement of Operations	Gross MW	AES Equity Interest (% rounded)
Asia					
Kazakhstan	Ekibastuz	Coal	1996	4,000	100
	Shulbinsk	Hydro	1997	702	0
	Sogrinsk	Coal	1997	301	100
	Ust-Kamenogorsk 1	Coal	1997	1,354	100
	Ust-Kamenogorsk 2	Coal	1997	270	0
	Ust-Kamenogorsk 3	Coal	1997	331	0
North America					
US – NY	Cayuga	Coal	1999	306	100
	Greenidge	Coal	1999	161	100
	Somerset	Coal	1999	675	100
	Westover	Coal	1999	126	100
US – TX	Deepwater	Pet Coke	1986	160	100
Latin America					
Argentina	Alicura	Hydro	2000	1,050	96
	Central Dique	Gas/Diesel	1998	68	51
	Central Termica San Nicolas	Coal/Gas/Oil	1993	675	96
	Parana	Gas	2001	845	100
	Quebrada de Ullum	Hydro	2004	45	0
	Rio Juramento – Cabra Corral	Hydro	1995	102	98
	Rio Juramento – El Tunal	Hydro	1995	10	98
	San Juan – Sarmiento	Gas	1996	33	98
	San Juan – Ullum	Hydro	1996	45	98
Colombia	Chivor	Hydro	2000	1,000	99
Panama	Bayano	Hydro	1999	260	49
	Chiriqui – Esti	Hydro	2003	120	49
	Chiriqui – La Estrella	Hydro	1999	45	49
	Chiriqui – Los Valles	Hydro	1999	51	49
Europe, Middle East, and Africa					
Hungary	Tiszapalkonya	Biomass/Coal	1996	116	100
U K	Indian Queens	Oil	1996	140	100

MW = megawatt, NY = New York, TX = Texas, UK = United Kingdom, US = United States.
Source: AES Corporation.

DESIGN AND MONITORING AND DEVELOPMENT EFFECTIVENESS FRAMEWORKS

Table A5.1: Design and Monitoring Framework

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact • Privatization of the Philippine power sector resulting in reliable and competitively priced electricity with a limited fiscal burden on the Government	• 70% of NPC-owned power plants privatized by end of 2009. • New capacity additions commensurate with demand growth • The spot market price goes down to the long-run marginal cost • NPC's debt below current level of P1 trillion	• Publicly available statistics and reports	**Assumption** • Power sector reform and privatization efforts continue
Outcome • Operational efficiency improved • Environmental, health, and safety standards raised to global standards	• Utilization increases • Heat rate improves • Emissions reduced to the World Bank standards • Competitively priced electricity supplied	• The project company's operating reports	**Assumptions** • The rehabilitation of the plant is completed. • Stable and competitively-priced coal supply **Risk** • Electricity demand below expectations
Outputs • The power plant acquired and rehabilitated by project company • Plant's dependable capacity increased	• Rehabilitation as per the specification • Stated output of 600 MW achieved	• Completion certificates • The project company's operating reports	**Assumption** • Finance raised
Activities with Milestones 1. Asset Purchase Agreement and Land Lease Agreement were executed on 26 July 2007 2. The debt and equity are to be injected to the Project Company and the acquisition cost be paid to PSALM 3. Rehabilitation work carried out in 2008–2010			**Inputs** **Equity** • Sponsor and IFC **Debt** • ADB • IFC • Commercial banks

ADB = Asian Development Bank, IFC = International Finance Corporation, kWh = kilowatt-hour, MW = megawatt, NPC = National Power Corporation.

Table A5.2: Development Effectiveness Framework

Objective	Impact	Performance Targets	Measurement
Private Sector Development	**Project Company Impact** • Brings technical and operational skills • Sets new standards in business management and corporate governance • Implements global standards for environment, health and safety	• Better access to improved technology • Profitable business and better management and control of pollutants	• The project company's operating, financial, and environmental performance
	Beyond Company Impact • Prepares for more private sector participation and financing • Provides competitive pressure on other players to raise efficiency • Induces innovation • Market-based electricity sector induces private investment in transmission and distribution • Demonstrates effectiveness of regulatory environment and private sector participation in the economy	• Follow-on privatization of other power plants financed by long-term private sector finance • Competitive tariff • Capacity factor of other power plants increased • Increased electricity supply to fuel economic growth and the standards of living raised • The wholesale power market deepened and competition among generators increased	• Percentage of privatized power capacity • Wholesale market tariff • Electricity supply and consumption volume • Decline in the volume of Government owned take-or-pay power purchase contracts • GDP growth and household income growth
Business Success	• Financially profitable • Sustainable operations	• Financial internal rate of return greater than weighted average cost of capital • Return on equity	• Financial ratios • Operations reports
Economic Sustainability	• Contributes to economic growth, improvement to the environment, improvement of living standards, and government revenues	• Economic internal rate of return greater than 12% • Increase in per capita electricity consumption • Reduction in Government power sector debt burden	• Economic internal rate of return • Electricity sales • National power sector debt