



<b>1. Project Data:</b>		<b>Date Posted :</b> 02/01/2001	
<b>PROJ ID:</b> P004607		<b>Appraisal</b>	<b>Actual</b>
<b>Project Name:</b> Leyte Luzon Geothermal	<b>Project Costs (US\$M)</b>	1333.4	1317.3
<b>Country:</b> Philippines	<b>Loan/Credit (US\$M)</b>	240.1	177.3
<b>Sector(s):</b> Thermal	<b>Cofinancing (US\$M)</b>	1093.3	1140.0
<b>L/C Number:</b> L3746; L3747			
	<b>Board Approval (FY)</b>		94
<b>Partners involved :</b> BOT Private Power Generation Contractors; JEXIM; GEF; Swedish Agency for International Technical and Economic Cooperation (BITS); Eurobond Investors	<b>Closing Date</b>	06/30/1999	03/31/2000
<b>Prepared by :</b>	<b>Reviewed by :</b>	<b>Group Manager :</b>	<b>Group:</b>

**2. Project Objectives and Components**

**a. Objectives**  
The project's objectives were:

1. Meet the increasing demand for power in Luzon using geothermal energy;
2. Strengthen the energy sector by implementing institutional, planning and financial improvements recommended by the Energy Sector Plan (ESP);
3. Support the large ongoing private sector participation in power generation, and facilitate it by extending the national grid;
4. Strengthen NPC's capabilities in environmental and social impact analyses;
5. Introduce enhanced co-financing operation (ECO) in the Philippines; and
6. Ensure the financial viability of NPC and PNOC for undertaking a long -overdue investment program.

**b. Components**  
The project's components were divided between those relating to NPC and those relating to PNOC -EDC.

NPC Components:

- Construction of two high voltage DC (HVDC) monopole converter stations and related electrode stations at Ormoc and Naga;
- Installation of submarine cable (about 19 km at 350 kV, 440 MW) linking the Leyte Luzon lines;
- Construction of a twin circuit HVDC overhead transmission line from Ormoc to Cabacungan cable terminal (about 176 km at 350 kV) and from Matnog to Naga (about 256 km at 350 kV);
- Rehabilitation of the Naga-Tayabas transmission line (about 205 km at 500 kV);
- Recruiting two advisers for strengthening its environmental and social engineering departments;
- Recruit consultants to design the Casecanan hydroelectric project and to support project implementation .

PNOC-EDC's Components:

- Development of a 440 MW Geothermal energy field to expand Leyte geothermal capacity from 200 MW to 640 MW, including:
  - drilling about 65 additional producer and injector wells in Malitbog, Mahanagdong and Alto -Peak;
  - contracting technical services for geothermal drilling;
  - construction of steam gathering systems;
  - constructing the related subtransmission systems in Leyte;

- constructing a pilot reinjection plant for CO<sub>2</sub>--a Global Environmental Facility (GEF) component; and
- recruiting consultants to assist with project implementation;
- Carrying out BOT contracts between PNOC-EDC and private sector companies to construct and operate 440 MW geothermal power plants.
- Construction of a 7km steamline interconnecting all the power plant steam collection systems . (This component was added, resulting in the extension of the loan closing date by 9 months).
- Updated reservoir assessment of the Leyte Geothermal Project .

### c. Comments on Project Cost, Financing and Dates

The Borrowers were NPC, PNOC/NPC and PNOC-EDC. Total project cost was US\$1,317.3 million. The substantial cost savings achieved by PNOC-EDC for its own components (18 percent) and by the BOT contracts with private power producers (7 percent) were largely offset by the 21 percent cost overrun by NPC. The project's financing consisted of a Bank loan for US\$ 177.3 million, compared to US\$240.1 million at appraisal. The Global Environmental Trust (GET) provided a grant in the amount of US\$ 31.2 million (US\$30.0 million at appraisal) to support the development of geothermal energy, rather than energy derived from coal . JEXIM provided a loan of US\$55.7 million (US\$114 million at appraisal); BOT Private Power Generation Contractors provided funds in the amount of US\$577.6 million (US\$620.4 million at appraisal); Eurobond investors provided funding of US\$ 100.0 million; and BITS (Sweden) provided funding in the amount of US\$46.0 million (US\$39.0 million at appraisal). Also, funds were provided by the Beneficiaries through internal cash generation : PNOC: US\$132.1 million (US\$92.0 million at appraisal); and NPC: US\$143.7 million (US\$41.9 million at appraisal). The project closed on March 31, 2000, nine months after the appraisal closing date of June 30, 1999. The extension of the closing date was due to the additional components added by PNOC .

### 3. Achievement of Relevant Objectives:

1. **Meet the increasing demand for power in Luzon using geothermal energy** : This objective was substantially achieved. The project achieved the objective of meeting the increasing demand for power in Luzon using indigenous and environmentally superior geothermal energy resources . In 1999, geothermal power accounted for about 27 percent of the total power generation in the country, including 80 percent and 15 percent of the power generation in the respective systems in Visayas and Luzon . Compared to the early 1990s, when the country was suffering from power shortages, consumers are better served and the elimination of the power crisis contributed to the country's economic growth . However, this achievement came at a high cost (in 1999, average production cost of NPC plants was P 1.76/kWh, whereas the average cost for NPC's contracts with the IPPs was P 2.66/kWh, of which the geothermal plants cost P 2.8/kWh) and the current estimate of the Net Present Value is negative for the economics of the project .
2. **Strengthen the energy sector by implementing institutional, planning and financial improvements recommended by the Energy Sector Plan (ESP):** This objective was partially achieved. Many of the actions in the Energy Sector Plan have been implemented, but there are still delays in implementing some actions because of Congressional delays in passing key legislation . NPC is still in a precarious financial situation and the objective of strengthening the financial viability of the project entities has not been achieved . The high cost of meeting the project's physical and environmental objectives was a contributing factor to this situation, and consequently a negative net present value (NPV) is currently estimated for the economics of the project .
3. **Support the large ongoing private sector participation in power generation, and facilitate it by extending the national grid:** This objective was substantially achieved. This objective was substantially achieved by the Project, with almost 51 percent of the total financing requirement funded by the private sector . PNOC-EDC entered into three BOT agreements with two private power companies for the construction, and 10-year operation, of three geothermal power plants .
4. **Strengthen NPC's capabilities in environmental and social impact analyses** : This objective was not achieved. NPC's capacity for social impact analysis is weak . In terms of resettlement, and as the ICR notes, there have been significant delays in compensation payments by NPC, particularly for land acquisition . These delays are partly beyond the control of NPC, in such cases as missing or incomplete documentation of some landowners . In addition, the lack of adequate right-of-way personnel has hampered NPC's efforts to speed up the land compensation negotiation process . These serious issues should have been adequately addressed prior to effectiveness, and certainly before the closure of the loan .
5. **Introduce enhanced co -financing operation (ECO) in the Philippines** : This objective was achieved. Through the successful implementation of enhanced cofinancing operation (ECO) under this project, NPC tapped the international bond market for the first time, which paved the way for its subsequent long -term commercial borrowings from this market .
6. **Ensure the financial viability of NPC and PNOC for undertaking a long -overdue investment program** : This objective was not achieved. NPC remains in serious financial difficulty . NPC has not complied fully with the financial covenants for several years, even prior to the Asian financial crisis . Until 1997, PNOC-EDC had consistently complied with all of the financial performance covenants . However, PNOC-EDC reported non-compliance with the current ratio covenant in 1997 and 1998 and the covenanted debt service coverage ratio in 1998. In the medium term, PNOC-EDC's latest financial forecast indicated its expectation of improvement in profitability .

#### 4. Significant Outcomes/Impacts:

The promotion of private sector participation in geothermal power generation projects in the Philippines is a significant outcome.

#### 5. Significant Shortcomings (including non-compliance with safeguard policies):

- Borrower Compliance with Safeguard Policy 4.30 (Involuntary Resettlement) was inadequate. There have been significant delays in compensation payments by NPC, particularly for land acquisition .
- Supervision of the resettlement component was inadequate and recognition of non-compliance with the issue was belated. Only in the final one-third of all supervision missions was compliance addressed and found unsatisfactory.
- Quality at entry was unsatisfactory, especially in terms of the resettlement component and the right-of-way issue.
- The SAR's risk assessment for the project was overly optimistic .

6. Ratings :	ICR	OED Review	Reason for Disagreement /Comments
<b>Outcome :</b>	Unsatisfactory	Unsatisfactory	
<b>Institutional Dev .:</b>	Modest	Modest	
<b>Sustainability :</b>	Unlikely	Unlikely	
<b>Bank Performance :</b>	Satisfactory	Unsatisfactory	OED concurs with the ICR's rating of Marginally Unsatisfactory for the project's quality at entry, which, in turn explains the overall Unsatisfactory Bank performance in terms of: (i) a design that is highly dependent on the passage of legislation (which, based on past experience, is often a predictor of serious project implementation delays and weakness); (ii) the failure to satisfactorily implement the Bank's own safeguard policies on resettlement and the inattention paid to the resettlement issue during the Bank's supervision in the early to middle years of the project; and (iii) the project's poor risk assessment.
<b>Borrower Perf .:</b>	Satisfactory	Unsatisfactory	OED rates the performance of the Borrowers' as Unsatisfactory because: (i) even though the physical components of the project were completed, it came at a very high cost and the project has a negative net present value; (ii) NPC continues to be in serious financial difficulty and PNOC-EDC is able to forecast improvements in profitability only recently, after a period of non-compliance with financial covenants; and (iii) NPC's continuing weakness in social impact analysis and its failure to satisfactorily carry out the Resettlement component.
<b>Quality of ICR :</b>		Exemplary	

**NOTE:** ICR rating values flagged with '\*' don't comply with OP/BP 13.55, but are listed for completeness.

#### 7. Lessons of Broad Applicability:

- Quality at entry is a critical success factor for project implementation . In particular, for the resettlement component, resolution of the right-of-way issue and completion of compensation payment is one of the pre-conditions prior to project construction . Moreover, an adequate risk analysis is essential for realistic expectations of project outcome .
- There are no short cuts to a successful complex operation; above -average inputs of Bank resources and broad staff skill mix for project design, appraisal and supervision are required .
- Frequent changes of task manager and team members are not conducive to efficiency and effectiveness of the Bank's inputs. On the other hand, synergies may be achieved by a series of Bank interventions with the same project team.
- While "fast-track" BOT projects have proved crucial in alleviating power shortages, the economic efficiency of

individual private investments should be improved with due consideration for (a) a cohesive sectoral approach, with special attention to prudent investment planning and financial management as well as risk management; and (b) rationalization of prices and risk sharing arrangements within a competitive and transparent framework.

- In cases where such obligations as BOT contracts have significant impact on the entities' finances, the legal agreements should made explicit reference to the treatment of such obligations in the definition of financial covenants.

**8. Assessment Recommended?**  Yes  No

**Why?** 1. The Philippines' experience in private sector participation in the energy sector may provide valuable lessons for OED's current study of the Bank Group's Performance in Private Sector Development in the Energy Sector.

2. To derive lessons related to the implementation of safeguard policies, which in the case of this project, involves environmental sustainability and involuntary resettlement . The latter merits additional evaluation focus, especially from the perspective of supervision monitoring systems and impact indicators . OD 4.30 states: "All involuntary resettlement should be conceived and executed as development programs, with resettlers provided sufficient investment resources and opportunities to share in project benefits . Displaced persons should be (i) compensated for their losses at full replacement cost prior to the actual move; (ii) assisted with the move and supported during the transition period in the resettlement site; and (iii) assisted in their efforts to improve their former living standards, income earning capacity, and production levels, or at least to restore them . Particular attention should be paid to the needs of the poorest groups to be resettled ." The factors behind the non-compliance with the resettlement safeguard policy needs further evaluation, particularly in two areas .

(a) Compensation Payments: The total number of households affected by the Leyte Geothermal Project was 106. These households have been resettled, but there have been significant delays in compensation payments by NPC, particularly for land acquisition (due, in part, to missing or incomplete documentation of some landowners). The lack of adequate right-of-way personnel has hampered NPC's efforts to speed up the land compensation negotiation process . To address this issue, NPC indicated its commitment to increase the number of ROW negotiators for the project .

(b) Action Plan: The ICR mission concluded that the original resettlement recovery action plan completion date (June 30, 2000) was overly optimistic. NPC then provided the Bank with a revised schedule which, according to the ICR, will realistically allow the completion of compensation for all cases which do not involve expropriation .

**9. Comments on Quality of ICR:**

This ICR is exemplary. It is clearly organized and successfully covered the intricacies of a very complex project . Moreover, it was frank in its assessment of the project's shortcomings and fair in its assessment of its achievements . Of particular note is the Lessons Learned section, which is notable for its clarity and insight . It is obvious that the author has given considerable thought to what lessons could be learned and how they could be usefully applied to future projects .