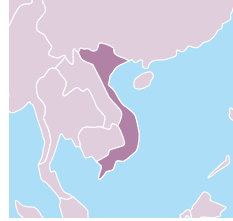




Phu My Thermal Power Plant Project (1) - (4)

Asia **Vietnam**



Contributing to increased power supply and economic revitalization in southern Vietnam by constructing a thermal power station

[External evaluator]

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Rating

Effectiveness, Impact	a	Overall rating A
Relevance	a	
Efficiency	b	
Sustainability	a	

Project Objectives

To meet the increasing power demand and to ensure stable power supply in the southern region by constructing a gas combined-cycle thermal power plant and related transmission lines / substations in Phu My, Ba Ria-Vung Tau Province, near Ho Chi Minh City, thereby contributing to the revitalization of the regional economy.

Outline of the Loan Agreement

- Loan amount / disbursed amount: 61,932 million yen / 59,434 million yen (total)
- Loan agreement: January 1994 (I)
- Terms and conditions: Interest rate: 0.75-2.3%; repayment period: 30-40 years (including a 10-year grace period); general untied (partially tied in parts)
- Final disbursement date: July 2005 (IV)
- Executing agency: Vietnam Electricity (EVN)
- Website URL: <http://www.evn.com.vn/>

Effects of Project Implementation (Effectiveness, Impact)

The power plant constructed in this project has produced more electric power since 2002 than the value planned at the time of the appraisal (5,450 GWh/year). The annual power production in 2006 stood at 6,416 GWh. Its availability factor has largely remained high. The maximum output has been almost on par with the planned value, with a low auxiliary power ratio of 2% or lower. In both the southern region and the country as a whole, power consumption in the commercial and manufacturing sectors grew 70% to 100% between 2001 and 2005. This power plant accounts for some 21% of the power production in the southern region and about 11% of the national power production. It is therefore reasonable to conclude that this project has significantly contributed to increased power supply in Vietnam and supported rapid economic growth in recent years throughout the country as well as the southern region.

Therefore, this project has largely achieved its objectives and its effectiveness is high.

Relevance

This project has been highly relevant with the Vietnam's national policies and development needs at the times of both appraisal and ex-post evaluation. At the time of the appraisal, there was a need to meet the growing power demand, and to cope with the looming demand and supply gap. In addition, at the ex-post evaluation, meeting the power demand, which is likely to continuously increase, remained an important issue to be addressed.

Efficiency

This project cost lower than planned (89.7% of planned cost for Phase IV) but took longer (119% of planned period); therefore the evaluation for efficiency is moderate. The extension of the project period was caused by a number of factors, including the change in the power generation method from the conventional type to that of a gas combined-cycle, the prolonged procurement process, and the behind-schedule construction of both the plant itself (mainly delays in approving subcontractors, supplying power and fuels, and installing a cooling water system) and the construction of transmission (in large part delays in land acquisition).

Sustainability

No major problems have been observed in the capacity of the executing agency, nor its operation and maintenance system; therefore, sustainability of this project is high.

Conclusion, Lessons Learned, Recommendations

In light of the above, this project is evaluated to be highly satisfactory. This project provides a good example of an effective project that has built not only a generator set, but also common facilities to be jointly used by another power plant within the same power generating complex and has promoted private sector investment in the power generation sector concurrently with the power generation capacity expansion with the ODA loan. Two major lessons have been learned from this project. First, it is important that any power-distribution company involved should train its staff and strengthen partnerships with external organizations so that it will be able to cope with difficulties, including the need to handle new equipment that uses novel technologies. Second, prompt action should be taken to address mechanical malfunctions after the completion of the plant. To this end, effective coordination should be established as necessary among the organizations concerned.

Operation and output performance of the Phu My Thermal Power Plant

Planned at the appraisal	Availability factor				Maximum output MW	Annual electric energy production GWh	Auxiliary power ratio
	GT11	GT12	GT13	GT14			
	Around 83-90%				1090	5,450	Around 3-5%
2002	85.0	78.7	76.6	74.5	1091	5,795	1.54
2003	90.2	86.7	90.6	84.5	1091	6,398	1.77
2004	92.6	85.0	88.1	94.9	1091	6,521	1.88
2005	89.6	92.5	85.7	99.0	1091	7,170	1.91
2006	77.1	75.7	88.8	83.5	1071	6,416	1.87
2007 (Jan.-Oct)	90.5	92.5	91.0	99.9	1071	6,744	1.78

Source: Phu My Thermal Power Company
Notes: Auxiliary power ratio = (Volume of electric power consumption within a plant per year / annual power production) × 100