



# Report and Recommendation of the President to the Board of Directors

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Project Number: 32273-02  
November 2009

Proposed Guarantee  
Guarantee to Commercial Banks for a Loan in  
Connection with the Investment Support Program for  
Viet Nam Electricity (Viet Nam)

Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 13 November 2009)

Currency Unit	–	dong (D)
D1.00	=	\$0.00005875
\$1.00	=	D17,021

## ABBREVIATIONS

ADB	–	Asian Development Bank
BOT	–	build-operate-transfer
EIRR	–	economic internal rate of return
ERAV	–	Electricity Regulatory Authority of Viet Nam
EVN	–	Viet Nam Electricity
FIRR	–	financial internal rate of return
GDP	–	gross domestic product
GIS	–	gas-insulated substation
IEE	–	initial environmental examination
IPP	–	independent power producer
LDU	–	local distribution unit
MOF	–	Ministry of Finance
MOIT	–	Ministry of Industry and Trade
NPT	–	National Power Transmission Corporation
PC1	–	Power Company 1
PC2	–	Power Company 2
PC3	–	Power Company 3
PIU	–	project implementation unit
PMU	–	project management unit
PRC	–	People's Republic of China
WACC	–	weighted average cost of capital

## WEIGHTS AND MEASURES

GW (gigawatt)	–	1,000 megawatt
GWh (gigawatt-hour)	–	1,000,000 kilowatt-hours
kV (kilovolt)	–	1,000 volts
KVA (kilovolt-ampere)	–	1,000 volt-amperes
kWh (kilowatt-hour)	–	1,000 watt-hours
MVA (megavolt-ampere)	–	1,000 kilovolt-amperes
MW (megawatt)	–	1,000 kilowatts

## NOTES

- (i) The fiscal year (FY) of the government and its agencies ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

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## CONTENTS

	<b>Page</b>
<b>GUARANTEE SUMMARY</b>	
I. THE PROPOSAL	1
II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES	1
A. Performance Indicators and Analysis	1
B. Analysis of Key Problems and Opportunities	3
III. THE PROPOSED GUARANTEE	9
A. Impact and Outcome	9
B. Outputs	10
C. Structure	11
D. Guarantee Plan	11
E. Guarantee Fee	12
F. Implementation Arrangements	12
G. Financial Performance of Viet Nam Electricity	14
IV. TECHNICAL ASSISTANCE	15
V. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS, AND RISKS	15
A. Project Justification	15
B. Environmental and Social Safeguards	16
C. Risks	19
D. Authorization Policy, and Combating Money Laundering and the Financing of Terrorism	20
VI. ASSURANCES	20
A. Specific Assurances	20
B. Conditions for Guarantee Effectiveness	21
VII. RECOMMENDATION	21
<b>APPENDIXES</b>	
1. Design and Monitoring Framework	22
2. Financial Performance and Projections of Viet Nam Electricity	26
3. Power Subsector Analysis	29
4. Development Partner Coordination	34
5. Summary Poverty Reduction and Social Strategy	37
6. Summary Resettlement Framework	41
7. Economic and Financial Assessment of Subprojects	47
8. Outline Terms and Reference for Consultants	50
9. Indicative Terms and Condition of the Proposed Guarantee	51

SUPPLEMENTARY APPENDIXES (available on request)

- A. Resettlement Framework
- B. Resettlement Plan
- C. Due Diligence Report on Resettlement
- D. Initial Environmental Examination
- E. Environmental Assessment and Review Framework
- F. Due Diligence on Environment
- G. Procurement Plan
- H. Technical Assistance for Implementation Supervision
- I. Guidelines on the Economic Assessment of the Subprojects
- J. Viet Nam Electricity Subsidiaries, Description, and Scope of the Project
- K. List of Subprojects, Cost Estimates, and Disbursement Plan
- L. Summary Initial Environmental Examination



## GUARANTEE SUMMARY

<b>Borrower</b>	Viet Nam Electricity (EVN).
<b>Guaranteed Lender(s)</b>	A syndicate of foreign commercial banks will arrange a 13-year, \$342 million loan to EVN. The Ministry of Finance (MOF), acting on behalf of the Government of Viet Nam, will issue a guarantee to the commercial banks guaranteeing EVN's payment obligations under the commercial banks' loan.
<b>Proposed ADB Guarantee</b>	The Asian Development Bank (ADB) will issue a guarantee to the commercial banks guaranteeing the Government's payment obligations under the MOF guarantee corresponding to \$325 million of principal (i.e. 95% of the \$342 million loan amount), plus interest payable by EVN under the commercial banks' loan. ADB's maximum aggregate liability under the ADB guarantee will not exceed \$500 million. Furthermore, in no event will ADB guarantee more than \$325 million of amounts corresponding to principal payable by EVN under the commercial banks' loan. The ADB guarantee will be issued on the conditions that the MOF guarantee has been duly executed by both MOF, on behalf of the Government, and by Viet Nam and ADB's standard sovereign indemnity provisions (e.g., cross-default, negative pledge, and indemnity provisions) are incorporated into the MOF guarantee, thereby obligating Viet Nam to reimburse ADB for all amounts ADB pays the commercial banks pursuant to the ADB guarantee. The proposed guarantee is to be anchored on two existing loans to EVN for the Northern Power Transmission Sector Project, and the Northern Power Transmission Expansion Project.
<b>Classification</b>	Targeting classification: General intervention Sector (subsectors): Energy (electricity transmission and distribution, trade finance) Themes (subthemes): <b>Sustainable Economic Growth</b> (promoting macroeconomic stability, promoting economic efficiency and enabling business environment) and <b>Private Sector Development</b> (private sector investment)
<b>Environment Assessment</b>	Category B  An initial environmental examination (IEE) and an environmental assessment and review framework (EARF) have been prepared. In addition, initial environmental examinations for representative sub projects have been prepared. One due diligence report for a completed subproject have been completed. The other subprojects will be assessed later, together with feasibility studies as for a sector loan. In addition, the transaction documentation will only allow loan proceeds to fund category B and category C subprojects. Category B sensitive and category A subprojects will not be financed under the commercial banks' loan to EVN.

<b>Project Description</b>	<p>The proposed project aims to provide EVN the means to access commercial bank loans on competitive terms to finance short-term investments (2010–2012) in transmission and distribution. The project will include the construction of about 18 kilometers (km) of 500 kilovolt (kV) transmission lines and 268 km of 220 kV transmission lines; 153 km of 110 kV transmission lines, and will add 900 megavolt-amperes (MVA) of additional transformation capacity at the 500 kV level, 3,400 MVA of additional transformation capacity at the 220 kV level, and 1,483 MVA of additional transformation capacity at the 110 kV level. On the medium- and low-voltage grids, the project will rehabilitate rural and urban grids, adding more than 200 km of medium- and low-voltage lines and cables.</p>
<b>Rationale</b>	<p>Infrastructure development is a key component of Viet Nam's medium-term development plan. Urgent expansion of infrastructure is required to remove existing bottlenecks, increase service coverage, and attract private sector investments that will help achieve and sustain the projected economic growth, especially given the huge economic growth seen in the past decade. The government aims to concentrate on upgrading the existing infrastructure and urging greater private sector participation in new infrastructure, including energy development and power generation.</p>
<b>Impact and Outcome</b>	<p>The impact of construction of new transmission lines and upgrading of existing transmission lines and associated substations will address the transmission bottlenecks and thus enable evacuation of additional power generation to load centers. The outcome of the project will be reduced system losses to below 10%, and ensuring reliable supply of electricity to meet the growing demand driven by the economic growth of the country.</p>
<b>Financing Plan</b>	<p>The total cost of the project is \$544 million, out of which \$342 million will be financed through a 13-year loan made by a syndication of foreign commercial banks; the remaining amount will be financed by EVN.</p>
<b>Executing Agency</b>	<p>Viet Nam Electricity</p>
<b>Procurement</b>	<p>EVN and its subsidiaries will issue tenders following national standards in procurement (in accordance with the procurement plan provided in Supplementary Appendix G). In accordance with the Article 3.16 of ADB's Procurement Guidelines (2007, as amended from time to time), ADB will conduct post-review of the procurement process to ensure (i) the need for economy and efficiency for procurement of the goods and works involved, (ii) all eligible bidders from developed and developing countries are given the same information and equal opportunity to compete in providing goods and works, and (iii) there is transparency in the procurement process.</p>

**Benefits and Impact**

The credit enhancement provided by the ADB guarantee will lower EVN's cost of borrowing and lengthen its loan tenure. It also allows commercial banks to reengage in lending in emerging markets and in the infrastructure sector.

The main beneficiaries of the project will be the industrial, commercial, residential, and rural consumers in Viet Nam. Consumers will benefit from the increase and improved quality of power supply, which will result in improved performance and longer life of electrical equipment. By reducing the technical losses, EVN will not have to resort to load shedding, which will benefit large economic centers where numerous industrial companies are established. The stable supply of electricity in Viet Nam will further stimulate economic growth, and increase employment and income-earning opportunities for the poor which will support the development of the country,

**Risks and Assumptions**

This project involves no new technology and EVN and all of its 11 subsidiaries have all the necessary skills to design and implement the transmission projects. EVN's revenues are in dong, but the loan from the commercial banks will be in foreign currencies. The primary risks are (i) the credit risk of EVN, (ii) foreign exchange fluctuations, and (iii) the ability of the Government to honor its obligations to the commercial banks under the MOF guarantee.

EVN's failure to pay under the commercial banks' loan could trigger a call on the MOF guarantee, which could result in a demand under the ADB guarantee. These risks will be mitigated by (i) the sovereign indemnity provisions in the MOF guarantee, and (ii) the annual revision of the tariffs that will reflect the change in fuel costs and local inflation.

In addition, since March 2009, Viet Nam has introduced an annual tariff adjustment under the proposed competitive power generation market, which will also mitigate the risks of the project.

**Technical Assistance**

Advisory technical assistance will be provided to EVN and its 11 subsidiaries to supervise the implementation of the project with regards to compliance with ADB's procurement and safeguards requirements. The cost of the technical assistance is estimated at \$720,000 of which \$600,000 will be financed through the Technical Assistance Special Fund (TASF-others). The executing and implementing agencies will finance \$120,000 equivalent in kind. The *ADB's Guidelines on the Use of Consultants (2007, as amended from time to time)* will apply.



## **I. THE PROPOSAL**

1. I submit for your approval the following report and recommendation on a proposed Asian Development Bank (ADB) guarantee (the Guarantee), which will cover certain payment obligations of the Ministry of Finance of the Government of Viet Nam under a guarantee issued in connection with commercial loans to Electricity of Viet Nam (EVN) under the EVN's Investment Support Program. ADB's obligations under the ADB guarantee will be counter indemnified by the Socialist Republic of Viet Nam. The report also describes proposed technical assistance (TA) for Implementation Supervision and if, the Board approves the proposed ADB guarantee, I, acting under the authority delegated to me by the Board, will approve the TA. The design and monitoring framework is in Appendix 1.

## **II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES**

### **A. Performance Indicators and Analysis**

#### **1. Macroeconomic Performance**

2. Viet Nam has enjoyed rapid economic growth in the two decades since 1988, when real gross domestic product (GDP) grew at the average annual rate of 7.4%. Following a modest slowdown in 1998–1999 caused by the Asian financial crisis, real GDP growth accelerated more or less steadily during 2000–2007, from 4.8% in 1999 to 8.5% in 2007.

3. However, the country has been experiencing severe macroeconomic difficulties since 2008. Inflation and the trade deficit surged in the first half 2008. The macroeconomic imbalances that had built up for several years contributed to the growing inflationary pressures, and persistent trade deficits were exacerbated by domestic supply-side shocks (such as poultry epidemics). The rise in world commodity prices also contributed to the surge in inflation. The government responded by tightening monetary and fiscal policies and taking other measures to stabilize the macroeconomic situation.

4. The global economic crisis adversely affected Viet Nam in 2008 by slowing growth of exports and contributing to the decrease in investment inflows. It has had more adverse impacts on Viet Nam in 2009. In particular, the crisis has further reduced exports, and has also reduced revenue from international tourism and inflows of foreign direct investment. Exports decreased by 9.8%, the number of international tourist arrivals fell by 22.1%, and foreign direct investment inflows declined by 18.4% in January–June 2009 compared with the same period in 2008.

5. The government has taken a number of measures to mitigate the adverse impact of the global economic crisis on growth and poverty in Viet Nam. These measures include one-off additional financial assistance to poor households, housing support for the poor, and provision of interest-free short-term loans to firms that have had to shed at least 30% of their staff and are experiencing difficulties in paying the wages of the remaining staff. Furthermore, the government has increased the budgetary allocation for the existing social assistance programs, such as the program for poverty reduction in ethnic minority and mountainous areas (so-called Program 135) and the health insurance program for the poor and near poor. It has also accelerated the formulation and approval of the program for accelerated poverty reduction in the 61 poorest districts. A total of \$935 million has been allocated to the social safety net in the central government budget for 2009, compared with \$518 million spent in 2008.

6. Viet Nam continues its impressive progress in reducing poverty. The Millennium Development Goal of halving poverty has been achieved well ahead of the 2015 target, with poverty falling from

28.9% in 2002 to 15.9% in 2006.<sup>1</sup> Poverty continues to persist in particular regions and ethnic minorities, however, with the incidence of poverty in minority populations remaining at 52.3% in 2006, though reduced significantly from 86.4% in 1993. In response, the government recently identified the 61 poorest districts in 20 provinces for priority attention.

7. Real GDP growth is forecast to rebound to 6.5% in 2010, if the external environment starts improving during that year. A medium-term economic challenge for the government is to increase growth without fueling inflation and widening the current account deficit. To this end, the government needs to raise the efficiency of the economy and ease supply-side constraints on growth by removing infrastructure bottlenecks, improve the legal and regulatory framework for private sector development, strength public administration, increase the supply of skilled labor, and speed up restructuring and equitization of state-owned enterprises and banks. Accelerating economic reforms would help Viet Nam weather the global financial crisis and strengthen foundations for sustainable rapid growth over the medium-to-long term.

## **2. Energy Sector Performance**

8. The strong economic growth in Viet Nam over the past decade has resulted in substantial demand for electricity throughout the country. The link between economic development and power demand is very strong. Over the past 10 years, GDP growth averaged 7.5% per annum, while electricity demand growth averaged about 16.0% per annum. The demand for electricity has been triggered by ongoing electrification in new areas, expansion of transmission and distribution networks, and the demand from industries in the new industrial zones and enterprises throughout the country and from the growing service sector. Between 1995 and 2008, household access to the grid increased from 50% to nearly 94% and the per capita consumption increased during the same period from 156 kilowatt-hours (kWh) per household per month to about 800 kWh. In recent years, a supply shortage has become more evident, although it eased in late 2008 and early 2009 as the demand growth reduced due to the global financial crisis.

9. Viet Nam Electricity (EVN), the national power utility in Viet Nam, is organized as a holding company, with a series of wholly owned subsidiaries. EVN owns the strategic power plants, holds majority shareholding stakes in partially privatized power plants, and invests as the sole investor or in partnership with other public and private investors in new power generating plants. Key subsidiaries include three regional power companies that are responsible for power transmission and distribution from 110 kilovolts (kV) and less in northern Viet Nam (Power Company 1 [PC1]), southern Viet Nam (Power Company 2 [PC2]), and central Viet Nam (Power Company 3 [PC3]); and power distribution companies responsible for power distribution in large cities such as Ha Noi, Ho Chi Minh City, Hai Phong, Da Nang, Hai Dong, Khanh Hoa, and Dong Nai. The power companies each maintain their own financial accounts and have a high degree of managerial and financial autonomy. Other key entities under EVN include the Power Transmission Corporation (NPT) responsible for high-voltage (220 kV and 500 kV) power transmission; four power engineering consulting companies; the National Load Dispatch Center; and subsidiaries engaged in non-core activities such as equipment manufacturing, telecommunications, real estate, and financial services.

10. EVN owns about 63.5% of all generation capacity in Viet Nam. The remainder is shared among independent power producers (IPPs) owned by state-owned corporations and groups and other small private investors (23%), foreign build-operate-transfer (BOT) projects<sup>2</sup> (9.8%), and imported power from the People's Republic of China (PRC) (3.7%).

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<sup>1</sup> Sources: Viet Nam household living standards surveys 2002, 2004, and 2006. Analysis of the data collected in the 2008 survey has not yet been completed and remains unavailable.

<sup>2</sup> Viet Nam distinguishes between IPPs and BOTs. Like BOTs, IPPs sell power to EVN under power purchase agreements but these agreements are not as favorable to the investors as those with BOT investors, and may get renegotiated as the

11. A reliable electricity supply is essential for economic growth and to achieve poverty reduction targets. Based on the Master Plan No. VI developed in 2006, to address the electricity deficit and improve the quality and reliability of electricity supply to industrial, rural, commercial, and residential consumers, Viet Nam needs to increase its generating capacity from 15,860 MW in 2008 to 25,000 MW in 2010 and 60,000 MW in 2025. To meet the investment needs for generation transmission and distribution, Viet Nam must mobilize about \$4 billion per annum between 2009 and 2015, out of which about \$2.3 billion per annum will be spent on new generation facilities and the remainder will be invested in transmission and distribution. Under the government plans, EVN will finance about two-thirds of the investment in generating plants (one-third is to be given to local and foreign direct investment in the form of IPP and BOT schemes) and 100% of the investment in transmission and distribution. Official development assistance and other external sources of financing will remain significant in the medium term as local borrowing. Domestic bond issuance and equitization are unlikely to be available. The government's Socio-economic Development Plan emphasizes the role of physical infrastructure in increasing national competitiveness and market access, and attracting investments needed to sustain the economic and poverty reduction. ADB's country operation business plan 2009–2011<sup>3</sup> for Viet Nam, supports the objectives of the Socio-economic Development Plan and notes the importance of removing infrastructure bottlenecks in the power sector to increase the competitiveness of Viet Nam's private sector-led manufacturing and service sectors.

12. As part of ADB's country strategy and program midterm review conducted in May 2009, a governance-risk assessment study<sup>4</sup> in the energy sector in Viet Nam concluded that the Public Financial Management Reform Program, led by the MOF, is making steady progress, with support from a multidonor trust fund. Despite the difficulties of tackling corruption in an environment lacking authentic separation of powers, there is clear evidence of firm government commitment and achievements. Analysis of the most recent aggregate perception data suggests that (i) both governance and corruption perceptions of Viet Nam are better than would be expected, (ii) corruption in Viet Nam is not a significant impediment to growth and poverty reduction, and (iii) cases of gross corruption are relatively modest in size and are effectively tackled when they are exposed. Regarding the power sector, the report concludes that EVN is an efficient and competent power utility although procurement and financial management could be improved.

## **B. Analysis of Key Problems and Opportunities**

### **1. Key Problems and Constraints**

13. There are a number of issues in the sector: (i) high dependence on hydropower, (ii) low reserve margins, (iii) maintaining adequate investments to meet exceptionally rapid growth in electricity demand, (iv) addressing shortcomings in pricing and tariffs, and (v) continuing sector reforms. The government and EVN are taking measures to address some of these issues, as explained below.

14. **Generation mix.** As of the end of 2008, the share of hydropower was 37% of total installed capacity, which is higher than the international average of about 15%, while that of coal (14% of the installed capacity) is lower than the international average of about 40%. While Viet Nam's dependency on hydropower has been slightly reduced with the implementation of new thermal power plants, its reserve margin during the dry season remains dangerously low. The gas-fuelled power plants in the

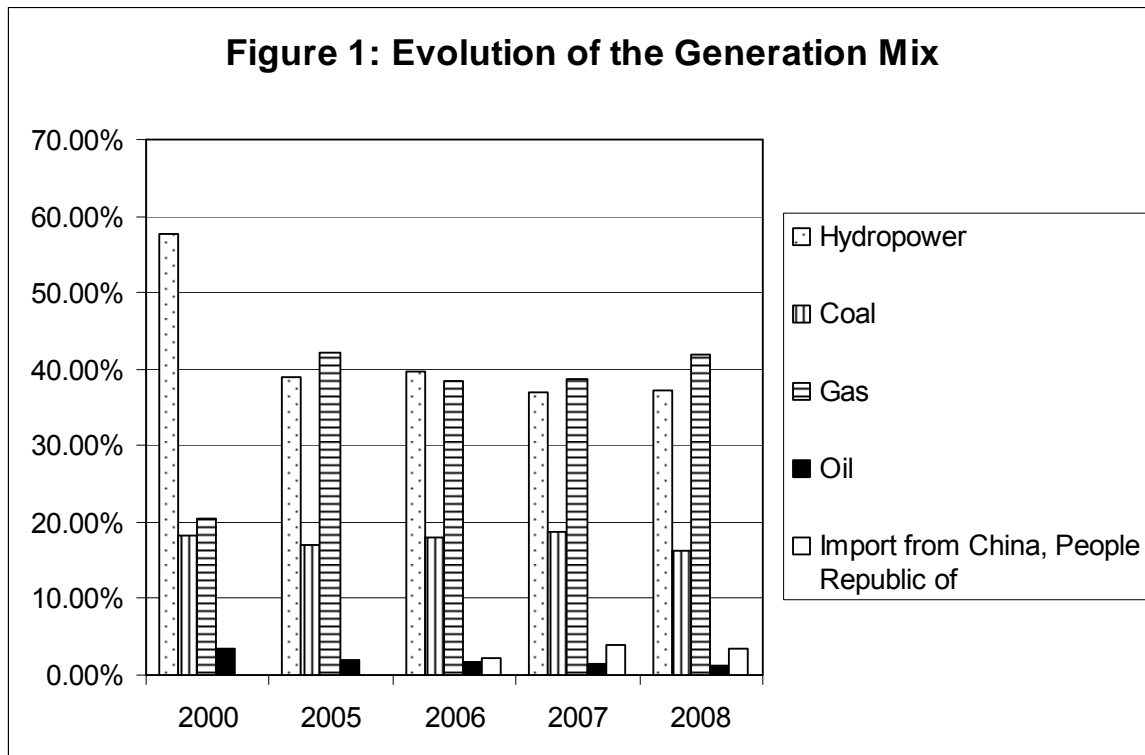
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nature of the industry changes. IPPs do not meet the requirements of Decree 78 (BOT Decree) and hence are ineligible for government support. BOTs, on the other hand, use a traditional two-part power purchasing agreement (involving capacity charge and energy charge) and may receive government support under Decree 78. Examples of BOTs are the Phu My 2.2 and Phu My 3 gas-fired power plants, both financed by ADB in 2002–2003.

<sup>3</sup> ADB. 2008. *Country Operation Business Plan: Viet Nam, 2009–2011*. Manila.

<sup>4</sup> This study followed the methodology set out in the implementation guidelines for ADB. 2006. *Second Governance and Anticorruption Action Plan*. Manila.

south (representing about 42% of the installed capacity of the country) can supply only part of central and northern Viet Nam's power demand deficit, and at a higher transmission cost. As a result, Viet Nam is importing electricity from the PRC during the dry season to meet demand in the north. Given the severe capacity shortage and imbalance in the energy mix, the government, in its Sixth Power Development Master Plan,<sup>5</sup> designates coal power plants as key base-load generation capacity and has identified priority coal-fired power plants for immediate implementation. The evolution of the generation mix is represented in Figure 1.



Source: Viet Nam Electricity.

15. The government estimates that the generation capacity addition of 42,000 MW during 2007–2017 will cost \$32.5 billion, or \$46.0 billion inclusive of transmission and distribution investments. EVN is expected to fund about \$35.0 billion of this but the remaining \$11.0 billion needs to be undertaken by non-EVN parties, i.e., other state-owned enterprises and private sector investors.

16. Viet Nam is relatively advanced in the participation of the private sector in power generation. Of the total 12,600 MW of installed capacity as of the end of 2007, EVN's share was 74% (9,359 MW), with 14% (1,771 MW) being IPPs, i.e., domestic non-EVN investors (private and state-owned enterprises), and 12% (1,466 MW) being BOTs, i.e., owned by foreign private investors. Even EVN's generation plants are being equitized (i.e., partially privatized) with the exception of the strategic multipurpose hydropower plants. As of the end of 2007, about 1,500 MW of EVN's generation capacity had been equitized.

17. **Private investment.** To meet the substantial investment needs, the government has always intended to invite wider participation of the private sector in generation. In Phu My 2.2 and Phu My 3 gas-fired power plants, the government used a unique dual approach in soliciting private sector investors through a competitive tender (for Phu My 2.2) and bilateral negotiation (Phu My 3). This dual

<sup>5</sup> The Sixth Power Development Master Plan stipulates that 8,225 MW of BOT capacities will be commissioned before 2015, with another 6,450 MW as either BOT or IPP capacity.

approach resulted in shorter project development time and competitive tariffs because the tariff of the bilaterally negotiated project (Phu My 3) was controlled by benchmarking against the tariff of the competitively tendered project (Phu My 2.2).

18. Since the Phu My projects, the government has continued seeking use of the same dual approach. Because the general regulatory framework for private sector participation is not comprehensive, the protections and incentives for investors had to be negotiated on a transaction-by-transaction basis. However, the government does not have enough technical or financial capacity to undertake the complex task of negotiating BOT projects. The government has also adopted a unique private-public partnership (PPP) approach, where one power plant complex hosts both an EVN-owned plant and a private sector owned plant, with the sites and common facilities prepared by EVN with public sector financing. While this approach was intended to ease the burden on the private sector investors, this has often resulted in delays in the handover of the site to the private sector investors, causing prolonged renegotiation of the tariff.

19. **Reform of the power sector.** Viet Nam is quite well advanced in terms of sector reforms. The Law on Electricity was approved by the National Assembly XI Session 6 of Viet Nam on 3 December 2004. Chapter IV of the law stipulates provisions for the electric market. Article 17 of the operational principles (i) ensures transparency, equality, fair competition, and nondiscrimination among participants in the electricity market; (ii) appreciates the rights to select partners and forms of transaction of electricity buyers and sellers on the market in accordance with the development level of the electricity market; and (iii) allows the state to regulate the operation of the electricity market to achieve sustainable development of the electricity system, meeting the requirements of safe, stable, and efficient electric supply. Article 18 stipulates that the electricity market will be formulated and developed by phases by setting up (i) a competitive power generation market (2005–2014), (ii) a competitive power wholesale market (2015–2023), and (iii) a competitive power retail market (after 2024).

20. By decision No. 26/2006/QĐ-TTg dated 26 January 2006, the prime minister approved a schedule and conditions for the formulation and development of the power market in Viet Nam that stipulates (i) assurance of stable and reliable electric supply with higher quality; (ii) attracting investment capital in electricity from all economic sectors, both domestically and abroad, gradually reducing the state budget investment in the electricity industry; (iii) step-by-step development of a stable competitive electricity market, eliminating subsidy for the electricity industry and increasing electricity buyers' rights to select electricity suppliers; (iv) improving the production and business efficiency of the electricity industry, and rising electricity price; and (v) ensuring sustainable development of the electricity industry.

21. In 2005, the Electricity Regulatory Authority of Viet Nam (ERAV) was established within the Ministry of Industry and Trade (MOIT) with its mission to implement the above decisions. EVN has separated the generation, transmission, and distributions operations into separate entities under a holding company. The equitization process has resulted in the transformation of EVN's subsidiaries into power joint-stock companies enabling future sale of shares to private and public investors as well as to employees. The power sector in Viet Nam accounts for about six power operations subsidiaries that have been equitized and with EVN retaining the majority of its shares. Most of the non-core business subsidiaries of EVN have been equitized and EVN is a minority stakeholder in most of them.

22. The ERAV functions include (i) issuing and enforcing electricity licenses, (ii) advising the minister on power market structure and policy, (iii) establishing retail tariff-setting principles and mechanisms, (iv) proposing market design and developing an associated regulatory framework, (v) approving the power purchase agreement of the single buyer, (vi) monitoring the progress of the implementation of new generation and transmission projects, (vii) monitoring the operation of the

power market, and (viii) monitoring and recommendations to protect the short- and long-term energy balance.

23. In line with the sector reform road map, the government approved EVN's proposal to establish the National Power Transmission Corporation (NPT) on 1 July 2008. The NPT is a fully state-owned single member limited liability company under EVN and is now officially in operation. It is responsible for the investment, construction, operation, and maintenance of the transmission network in Viet Nam, including 220 kV and 500 kV lines and associated substations. NPT subsidiaries consist of four power transmission companies (PTCs)—Power Companies 1, 2, 3, and 4—and three power project management boards—the Northern Power Project Management Board, Central Power Project Management Board, and Southern Power Project Management Board. The PTCs are dependent accounting entities. Their expenses are allocated based on actual maintenance cost, without accounting for the transmitted power capacity or energy. The power project management boards are nonproductive entities and their duty is to manage investment projects according to an annual agreed plan and budget approved by EVN. The NPT is responsible for covering the expenses of investment and operation by itself.

24. **Pricing and tariffs.** The average tariff (even if it was increased on 1 March 2009 to \$0.058/kWh from \$0.050/kWh) is still low due to the depreciation of the dong. Increases are needed for EVN and its successor companies to retain earnings that are needed for future investment and also to attract foreign investors. The actions on the tariff are part of the power sector reform that is currently ongoing through various technical assistance projects funded by the "Six Banks."<sup>6</sup>

25. The government intends to retain a uniform national tariff all over the country that means that some cross-subsidy mechanisms between regions will have to be implemented. In addition, a tariff regime that is fair, transparent, and predictable is essential to attracting direct investment. Under the power sector reform, action on tariffs is a key element and the main issue will be to ensure that the poor are protected by maintaining some lifeline tariffs, and at the same time to ensure that the applied tariffs effectively reflect the cost of supply.<sup>7</sup> By Resolution No.21/2009/QD-TTg of 12 February 2009, the government approved a tariff adjustment mechanism. The tariff will have to be revised annually to reflect the market price, and the MOIT and the MOF will be responsible for assessing and implementing such adjustments.

26. **Network performance.** Electrical equipment in a power transmission and distribution network are the core assets of a power utility. The development of the network needs to meet both the increase in peak demand and the delivered energy. Failure to do so will result in (i) the overload of high-voltage equipment, thus creating bottlenecks in the transmission and distribution network; and (ii) increased technical losses. Because of higher transmission and distribution losses, more electricity needs to be generated to meet the same amount of power demand by end-use customers.

27. With 14%–15% of demand for electricity growth during the past 10 years, and with additional generation of only 5,300 MW between 2005 and 2008, the transmission and distribution systems in Viet Nam need urgent reinforcement to remove the current bottlenecks and decrease the technical losses that are inherent in the system due to overloaded transmission and distribution lines and power transformers.

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<sup>6</sup> The Six Banks in Viet Nam are the most active commercial banks in terms of official development assistance in Viet Nam: (i) the Agence Française de Développement, (ii) ADB, (iii) Japan International Cooperation Agency, (iv) Korean Export-Import Bank, (v) German Development Corporation through KfW, and (vi) the World Bank.

<sup>7</sup> ADB is involved on a small scale in the determination of the tariffs through the technical assistance project approved on 22 December 2008 for \$225,000—ADB. 2008. *Technical Assistance for Capacity Building of the National Power Transmission Corporation in a Competitive Power Market Environment*. Manila (TA 7222-VIE).

28. In addition, in early 2009, the government requested EVN to take over the operation and maintenance of the local distribution units (LDUs) that distribute power on behalf of EVN at the commune level (EVN was asked to take over 7 million consumers in 5,000 communes) due to their inefficiency, high technical and commercial losses (about 25%), and high tariff applied to local consumers. Although the tariffs are set at the national level, the retail tariffs at the LDU level are fixed by the communes. The LDUs purchase electricity from EVN at the regulated tariff and add on their distribution costs that includes the technical and nontechnical losses plus their return on investment. By taking over operation of these LDUs, EVN has to invest in the modernization and reinforcement of these local distribution systems to meet EVN's technical standards and have in place a uniform tariff for all consumers in the country.

29. **The proposed project.** The proposed project aims to provide EVN the means to access commercial bank loans on competitive terms to finance short-term investments (2009–2011) in transmission and distribution. The project will include the construction of about 18 kilometers (km) of 500 kV transmission line, 180 km of 220 kV transmission lines, and 280 km of 110 kV transmission lines, and will add 900 MVA of additional transformation capacity at the 500 kV level, 3,080 MVA of additional transformation capacity at the 220 kV level, and 1,807 MVA of additional transformation capacity at the 110 kV level. On the medium- and low-voltage grids, the project will add more than 200 km of medium- and low-voltage lines and cables and will rehabilitate rural and urban grids.

## 2. External Assistance

30. ADB external assistance has mainly targeted generation and transmission projects rather than distribution and rural electrification that has been the main focus of the World Bank, as explained in para. 31.

31. The World Bank has led the external assistance for rural electrification. The Rural Electrification I project (completed in 2007 with a total investment of \$150 million) financed the connection of more than 500,000 households. Rural Electrification II (commenced in 2006 with \$200 million, supplemented with an additional \$250 million in 2008) addressed strengthening EVN's medium-voltage network to support rural electrification, rehabilitating existing low-voltage systems owned and operated by LDUs, and developing institutions and participants to ensure service delivery. The Rural Distribution Project (approved in 2008 with \$150 million) focused on improving medium-voltage systems (22 kV and 35 kV) and supports the corporate development of EVN.

## 3. Lessons

32. Between 1995 and 2008, ADB made six public sector loans to the Viet Nam power sector covering distribution, transmission, and generation. There were two private sector loans for two separate gas-fired plants at Phu My, with a total value of \$90.0 million and associated guarantees of \$60.0 million. There were 27 technical assistance projects with a total value of \$17.8 million. Ten of these were project preparatory technical assistance to help prepare the design of investment projects. Some of the advisory technical assistance projects were designed to address safeguard issues through building capacity for environmental assessment and resettlement planning and implementation, while others assisted in drafting energy conservation law and electricity law, and preparing the power sector road map, power design, and capacity building of the ERAV and NPT's transmission tariff formulation and benefit-sharing mechanisms. These technical assistance projects cover a range of activities including reform planning, power market design, and promoting the involvement of the private sector in particular projects. In addition, ADB has sustained a dialogue with the government and its agencies, and with other development partners, over power sector policy and the reform process.

33. ADB's program of support to the Viet Nam power sector has been, and continues to be, highly relevant to the country's development goal—reducing poverty through high economic growth. ADB's

country and program strategy for 2007–2010 identifies the removal of power and other infrastructure bottlenecks as a major component of achieving business-led pro-poor economic growth. The various public sector loans which ADB has provided have all been highly relevant to the country's needs, focusing on the individual priorities within the sector at the time the loans were made, e.g., distribution, transmission, and generation. Similarly, the technical assistance program has been fully supportive of the program of sector reforms advocated by both government and development partners.

34. ADB's last energy sector project loans used to finance power transmission projects were approved in December 2004 and December 2005.<sup>8</sup> There have been no problems with counterpart financing and it is not foreseen as a major issue. Compliance with ADB's social and environmental safeguards policies and slow processing of contract awards delayed implementation of these projects. Lengthy procurement, land acquisition, and resettlement has been the main cause of implementation delay of these two projects. The government's approval process, particularly for procurement, remains time-consuming and has led to project implementation delays. Therefore, the proposed subprojects have been selected on the basis of their readiness (feasibility studies approved, and technical design and bidding documents under development) and also on the basis of minimum environmental and social impacts.

35. Earlier ADB technical assistance (attached to loans) concentrated on (i) providing capacity building to the power sector, specifically to financial management of EVN's distribution units; (ii) providing cost-based electricity tariff setting; (iii) commercializing distribution companies; and (iv) setting up a power sector regulatory framework. As a result, the corporate governance of the sector has improved. A technical assistance project on power market design<sup>9</sup> is assisting the government in making strategic decisions regarding (i) the market structure; (ii) role of EVN and its subsidiaries, and the relationship among them; (iii) the nature of the regulatory regime and key regulatory mechanisms; and (iv) the terms of power purchase arrangements for new and equitized power plants. Ongoing technical assistance is concentrating on the computation of transmission charges in the competitive generation market that is expected to start in January 2010.<sup>10</sup>

#### 4. ADB Sector Experience Strategy and Opportunities

36. ADB has approved four ordinary capital resources loans totaling \$1.68 billion and three Asian Development Fund loans<sup>11</sup> totaling \$186.3 million for Viet Nam's power sector. The Asian Development Fund loans were primarily for expansion and rehabilitation of distribution networks in urban areas. The two ordinary capital resources loans approved in 2004 and 2005 finance expansion of the 500 kV high-voltage transmission systems in northern Viet Nam (footnote 8). More recently, ADB has focused on power generation. For example, the Mong Duong 1 Thermal Power Project and

<sup>8</sup> ADB. 2004. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Socialist Republic of Viet Nam for the Northern Power Transmission Sector Project*. Manila; ADB. 2005. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Socialist Republic of Viet Nam for the Northern Power Transmission Expansion Sector Project*. Manila.

<sup>9</sup> ADB. 2006. *Technical Assistance to the Socialist Republic of Viet Nam for the Power Market Design*. Manila. (TA 4768-VIE, approved on 1 March, for \$500,000).

<sup>10</sup> ADB. 2008. *Technical Assistance to the Socialist Republic of Viet Nam for the Capacity Building of the National Power Transmission Corporation in a Competitive Power Market Environment*. Manila. (TA 7222-VIE, approved on 22 December, for \$225,000).

<sup>11</sup> ADB. 1972. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Socialist Republic of Viet Nam for the Saigon Power Project*. Manila (Loan 0108-VIE, for \$6.3 million, approved on 14 November); ADB. 1995. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Socialist Republic of Viet Nam for the Power Distribution Rehabilitation Project*. Manila (Loan 1358-VIE, for \$80 million, approved on 8 June); and ADB. 1997. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Socialist Republic of Viet Nam for the Central and Southern Viet Nam Power Distribution Project*. Manila (Loan 1585-VIE, for \$100 million, approved on 27 November).

Song Bung 4 Hydropower Project are financing power generation facilities using domestic coal and hydro resources in an environmentally sustainable manner.<sup>12</sup> ADB has also supported private sector investment in power generation by providing direct loans and political risk guarantees for the Phu My 2.2 gas-fired power project in 2002 and the Phu My 3 project in 2003.<sup>13</sup>

37. Through a series of technical assistance projects, ADB has assisted Viet Nam to facilitate policy reforms, including the new Electricity Law, and laid the framework for power sector restructuring.<sup>14</sup> During 2005 and 2006, ADB approved a series of advisory technical assistance projects to improve the crosscutting social and environmental issues of the power sector, promote energy efficiency in the industry sector, and develop a benefit-sharing mechanism for people affected by hydropower projects.

38. Socially inclusive and environmentally sustainable economic growth is a key pillar of ADB's country strategy for Viet Nam. The competitiveness of Viet Nam's economy, especially the industry sector, depends on the availability of a cheap and reliable supply of electricity. ADB's power sector strategy aims to help the government meet the challenge of increasing demand for electricity in a financially, environmentally, and socially sustainable manner. The large investment requirement of the power sector requires concerted efforts from both public and private sector investors. A significant proportion of the public sector investments will be financed through multilateral or bilateral financing, and ADB will increasingly seek cofinancing from other financiers in the sector. ADB will also assist public sector entities in the sector to access international capital markets by providing advisory and risk-sharing instruments such as guarantee instruments.

39. This project will be ADB's first investment in the power subsector in Viet Nam not using a conventional lending arrangement.

### III. THE PROPOSED GUARANTEE

#### A. Impact and Outcome

40. The project will support economic growth in Viet Nam and aim to ensure access to a reliable supply of quality electricity to meet the industrial, commercial, and residential consumer demands that grew at a rate of 15% per annum in the decade since 1998. With the financial crisis, the level of demand growth has reduced to 10% in the first 6 months of 2009, but is nonetheless a double-digit growth rate. With such a growth rate, the country is facing power shortages and lacks investment in the transmission and distribution systems that have led to an increase of technical losses from 10% in 2007 to 11% in 2008.

41. The proposed outcome is in line with the plan of EVN and the government to add at least another 10,000 MW of installed capacity in 2010–2011. The project will help the government meet this target in terms of economic development of the country. The extra capacity of new transmission and

<sup>12</sup> ADB. 2007. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Socialist Republic of Viet Nam for the Mong Duong 1 Thermal Power Project*. Manila (Loan 2353–VIE, approved on 2 October); and ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Socialist Republic of Viet Nam for the Song Bung Hydropower Project*. Manila (Loan 2429–VIE, approved on 26 June).

<sup>13</sup> ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and a Partial Risk Guarantee to the Socialist Republic of Viet Nam for Mekong Energy Company Ltd. (Phu My 2.2 Power Project)*. Manila (Loan 1856–VIE, for \$50 million and \$25 million partial risk guarantee, approved on 2 July); and ADB. 2003. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan and a Partial Risk Guarantee to the Socialist Republic of Viet Nam for Phu My BOT Power Company*. Manila (Loan 1923–VIE, for \$40 million and \$35 million partial risk guarantee, approved on 18 October).

<sup>14</sup> ADB. 2001. *Technical Assistance to the Socialist Republic of Viet Nam for the Road Map for Power Sector Reform*. Manila (TA 3763–VIE, for \$400,000, approved on 6 November); and ADB. 2006. *Technical Assistance to the Socialist Republic of Viet Nam for Power Market Design*. Manila (TA 4768–VIE, for \$500,000, approved on 1 March).

distribution networks will allow the grids to absorb the additional power plants coming on line in the short term.

42. The ADB guarantee will be issued in respect of an up to \$342 million loan to be made by certain commercial banks to EVN. The commercial bank loan to EVN will be guaranteed by an MOF guarantee. The loan will be used to construct new and upgrade existing 500 kV, 220 kV, and 110 kV power transmission lines and associated substations and to expand and upgrade existing medium- and low-voltage grids in both rural and urban areas in Viet Nam.

## **B. Outputs**

43. The ADB guarantee will provide a credit enhancement for the financing of 66 transmission and distribution subprojects that are urgently needed by the National Power Transmission Corporation (NPT) and 10 distribution companies (all subsidiaries of EVN). The project scope is summarized below. The list of the subprojects, their cost estimates, and the disbursement plan is shown in Supplementary Appendix I. The details of the subprojects for the 11 EVN subsidiaries are provided as Supplementary Appendix K.

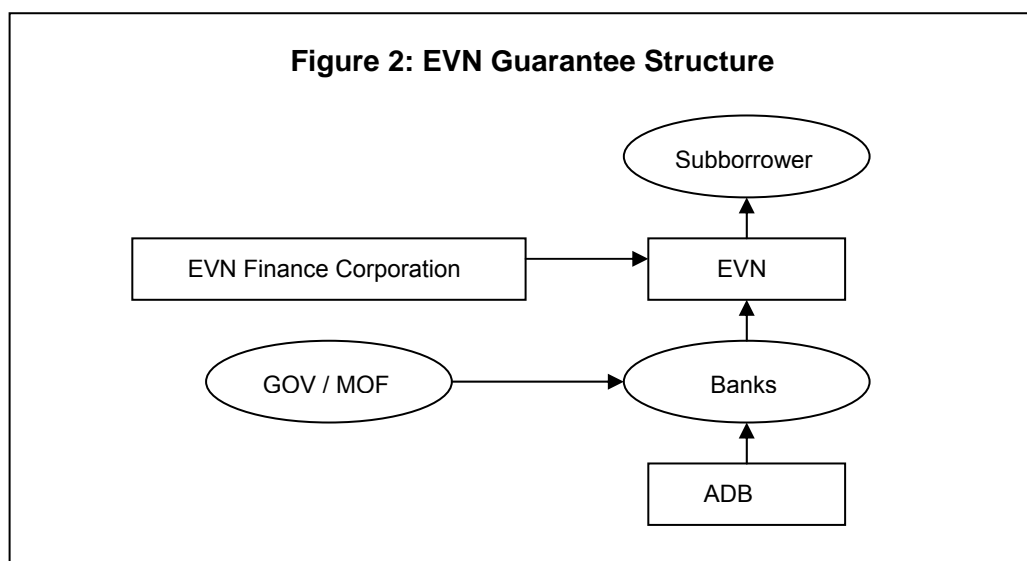
- (i) NPT requested financing for 14 subprojects that will add about 18km and 268 km of 500 kV and 220 kV transmission lines respectively, and 500 kV and 220 kV substations with total capacity of 3,400 MVA for an estimated cost of \$239 million, out of which \$143 million will be from the ADB-guaranteed loan.
- (ii) Regional Power Company No. 1 (PC1) requested financing for 12 subprojects that will construct about 59 km of 110 kV transmission lines, and will add additional transformer capacity of 373 MVA in the 110 kV substations. In addition, PC1 will rehabilitate rural distribution networks including medium- and low-voltage networks in 509 communes in 5 northern provinces. The total estimated cost of the projects for PC1 is \$173.0 million, of which \$94.5 million will come from the ADB-guaranteed loan.
- (iii) Regional Power Company No. 2 (PC2) requested financing for five subprojects that will construct 16 km of 110 kV transmission lines, and will add additional transformer capacity of 206 MVA in the 110 kV substations. The total cost of the project is estimated to be about \$12.6 million, out of which \$10.7 million will be from the ADB-guaranteed loan.
- (iv) The Ha Noi Power Company requested financing for 10 subprojects that will add additional transformer capacity of 191 MVA in the 110 kV substations. It will also rehabilitate and upgrade rural and urban distribution systems. The total estimated cost is about \$39.0 million, out of which \$33.4 million will be from the ADB-guaranteed loan.
- (v) The Hai Duong Power Company requested financing for 3 subprojects that will construct 14 km of new 110 kV transmission lines and will rehabilitate and upgrade the medium- and low-voltage grids in one district. The estimated cost of the subprojects is \$8.0 million, out of which \$6.4 million will be from the ADB-guaranteed loan.
- (vi) The Ninh Binh Power Company requested financing for one subproject that will entails the installation of two power transformers with a total capacity of 50MVA in the existing 110 kV substations. The project cost is estimated to be \$2.3 million, out of which \$2.2 million will be from the ADB guaranteed loan.
- (vii) The Hai Phong Power Company requested financing for 9 subprojects that will construct about 32 km of new 110 kV transmission lines and will add additional transformer capacity of 218 MVA in the 110 kV substations, will construct about 32 km of 22kV and 35 kV medium-voltage transmission lines, and 33 km of 0.4 kV low-voltage distribution lines. The total cost of the projects is estimated to be \$26.3 million, out of which \$19.7 million will be from the ADB-guaranteed loan.
- (viii) The Da Nang Power Company requested financing for three subprojects that will construct 5 km of 110 kV transmission lines, will add additional transformer capacity of

65 MVA in the 110 kV substations, and will expand the 22 kV medium-voltage system transmission lines at a cost of \$4.7 million, out of which \$3.8 million will be from the ADB-guaranteed loan.

- (ix) The Khanh Hoa Power Company requested financing for one subproject that will construct 4 km of 110 kV transmission lines, and will add additional transformer capacity of 20 MVA in the 110 kV substation.. The total cost of the project is estimated at \$5 million, out of which \$3.5 million will be from the ADB-guaranteed loan.
- (x) The Dong Nai Power Company requested financing for 3 subprojects that will construct 8 km of 110 kV transmission lines, and will add additional transformer capacity of 229 MVA in the 110 kV substations. The total cost of the project is estimated at \$7 million, out of which \$5.5 million will be from the ADB-guaranteed loan.
- (xi) The Ho Chi Minh Power Company requested financing for five subprojects that will construct 23 km of 110 kV transmission lines, and will add additional transformer capacity of 126 MVA in the 110 kV substations. The total cost of the project is estimated at \$26.4 million, out of which \$19.0 million will come from the ADB-guaranteed loan.

### C. Structure

44. The ADB guarantee would be the second guarantee issued by ADB in Viet Nam, but the first issued on a sovereign basis. The EVN structure guarantee is shown in Figure 2 below.



ADB = Asian Development Bank, EVN = Viet Nam Electricity, GOV = Government of Viet Nam, MOF = Ministry of Finance.

Source: ADB.

### D. Guarantee Plan

45. A syndicate of foreign commercial banks is arranging a 13-year, \$342 million loan to EVN. The MOF, on behalf of the Government of Viet Nam, will issue a guarantee to the commercial banks guaranteeing EVN's payment obligations under the commercial banks' loan. The commercial banks have requested a guarantee from ADB to cover the risk of nonpayment under the MOF guarantee. ADB proposes to issue a guarantee to the commercial banks guaranteeing the Government's payment obligations under the MOF guarantee corresponding to \$325 million of principal (i.e. 95% of the \$342 million loan amount), plus interest payable by EVN under the commercial banks' loan. ADB's maximum aggregate liability under the ADB guarantee will not exceed \$500 million. The tenor of the proposed ADB guarantee would match the maturity of the commercial banks' loan to EVN.

ADB's obligation to pay the commercial banks under the ADB guarantee will arise in the event ADB determines that the Government has breached its payment obligations under the MOF guarantee. The ADB guarantee will be issued on the conditions that the MOF guarantee has been duly executed by both MOF, on behalf of the Government, and by Vietnam and ADB's standard sovereign indemnity provisions (e.g., cross-default, negative pledge, and indemnity) are incorporated into the MOF guarantee, thereby obligating Viet Nam to reimburse ADB for all amounts ADB pays the commercial banks pursuant to the ADB guarantee. The guaranteed loan structure is provided in Table 1 and the Project financing plan in Table 2.

**Table 1: Guaranteed Loan Structure**  
(\$ million)

Item	Amount <sup>a</sup>
A. ADB Guarantee	325.00 <sup>a</sup>
B. Portion of the Commercial Banks' Loan not Guaranteed by ADB <sup>b</sup>	17.00
<b>Total (A+B)</b>	<b>342.00</b>

ADB = Asian Development Bank.

<sup>a</sup> Does not include interest that the commercial banks may wish to have guaranteed/insured.

<sup>b</sup> The commercial banks may insure or guarantee this amount with other guarantors or insurers.

Source: ADB estimates.

**Table 2: Project Financing Plan**  
(\$ million)

Source	Total	Percent
Consortium of foreign commercial banks	342.00	62.87
EVN/domestic banks	202.00	37.13
<b>Total</b>	<b>544.00</b>	<b>100.00</b>

EVN = Viet Nam Electricity.

Source: EVN.

## E. Guarantee Fee

46. [This information was deemed confidential according to exception # 8 and 9 of ADB's Public Communications Policy.]

## F. Implementation Arrangements

### 1. Project Management

47. EVN will be the executing agency of the Project and responsible for the overall technical implementation of the Project. EVN has designated the International Relation Department-IDC at EVN's headquarters to directly interface with ADB and other entities involved in the implementation of the Project.

48. EVN will, within three months after effectiveness of the guarantee, appoint EVN finance corporation (EVN FC) to assume the role of the project management unit (PMU) and oversee the overall implementation of the Project, including ensuring that the Project is implemented in accordance with ADB's policies and procedures.

49. Similarly, in each of the 11 subsidiaries, a project implementation unit (PIU), if not yet existing, will be established and headed by the respective regional general manager. The PIUs will be responsible for implementing and coordinating all local activities including reporting to headquarters and overseeing the implementation of the civil works and social and environmental safeguards related to the project. Insofar as it relates to the activities of the PIU, each regional general manager will report to EVN finance corporation as the PMU.

50. Each of the 11 PIUs will prepare a quarterly report on the progress of the implementation of the subprojects and submit them to the IDC who will then forward them to ADB. The quarterly reports will include information on the progress of the procurement activities and provide data to demonstrate that the procurement activities under the project have been conducted in accordance with ADB's Procurement Guidelines (2007, as amended from time to time). In addition, ADB and EVN will conduct semiannual review missions, in which ADB will review and conduct due diligence on procurement and safeguards on some subprojects to be randomly selected. Commercial banks will be invited to join these semiannual reviews.

51. Once a year a tripartite meeting will take place with EVN, the commercial banks, and ADB to review the progress of the works.

## 2. Implementation Period

52. The guaranteed loan is expected to be disbursed by between the end of 2009 and 31 December 2012, as shown in Table 3.

**Table 3: Disbursement Schedule**

No.	Agency	Cost Estimate (\$ million)	Guaranteed Loan (\$ million)	Disbursement (\$ million)		
				2010	2011	2012
1	National Power Transmission Corporation	238.89	143.20	9.29	75.11	58.80
2	Power Company No. 1	172.94	94.55	87.55	7.00	
3	Power Company No. 2	12.60	10.71	2.14	8.57	
4	Ha Noi Power Company	39.27	33.38	3.47	29.91	
5	Hai Duong Power Company	8.24	6.41	4.80	1.61	
6	Ninh Binh Power Company	2.33	2.21	1.11	1.11	
7	Hai Phong Power Company	26.25	19.69	2.10	17.59	
8	Da Nang Power Company	4.73	3.79	0.49	3.30	
9	Khan Hoa Power Company	5.00	3.50	3.50	-	
10	Dong Nai Power Company	7.10	5.50	3.16	2.34	
11	Ho Chi Minh Power Company	26.43	19.07	-	19.07	
	<b>Total</b>	<b>543.77</b>	<b>342.00</b>	<b>117.62</b>	<b>165.58</b>	<b>58.80</b>

Source: Viet Nam Electricity.

## 3. Procurement

53. EVN will issue tenders using international competitive bidding procedures, national competitive bidding, and direct contracting for compatibility of computerized control systems in existing substations and to procure the distribution and transmission equipment and proprietary equipment such as additional line and transformer bays in existing gas-insulated substations. In accordance with the Article 3.16 of ADB's *Procurement Guidelines* (2007, as amended from time to time), ADB will conduct post-review of the procurement process to ensure (i) the need for economy and efficiency, including procurement of the goods and works involved; (ii) all eligible bidders from developed and developing countries are given the same information and equal opportunity to compete in providing goods and works; and (iii) there is transparency in the procurement process. A preliminary procurement assessment of the 11 subsidiaries shows that all subsidiaries have already worked under ADB or under the World Bank procurement guidelines and are reasonably familiar with their procurement processes.

#### **4. Stakeholder Participation and Consultation**

54. High-level and working-level consultations will be held by ADB and/or by the TA consultant with EVN on a regular basis to ensure implementation of social and environmental safeguard plans, including regular meetings with commercial banks on loan disbursements. EVN will be required to recruit an independent monitoring agency, within three months after effectiveness of the guarantee to monitor the implementation of safeguards plans and provide quarterly progress reports during the implementation of the project.

#### **5. Accounting, Auditing, and Reporting**

55. EVN subsidiaries will prepare and maintain separate accounts for project-related expenditures. EVN finance corporation as the PMU will consolidate and review such accounts and, after auditing, submit the same to ADB. Project accounts will be audited annually by an independent auditor acceptable to ADB. The audited accounts and related financial statements together with the audit report will be submitted to ADB no later than 6 months following the close of the fiscal year to which they relate.

56. EVN will maintain a (i) self financing ratio of 25% or above, (ii) debt service coverage ratio of 1.5 or above, and (iii) long-term debt-equity ratio of at least 70:30 or less. EVN will (i) maintain an internal audit function to undertake timely audit of project accounts in accordance with generally accepted accounting principles; (ii) maintain separate accounts for the Project, including the financing provided by EVN; and (iii) provide monthly progress reports, annual audited project accounts, and consolidated audited accounts of EVN.

57. The EVN finance corporation, as the PMU, will prepare quarterly financial and physical progress reports and submit these to ADB. The monthly reports are to be submitted not later than 1 month following the end of the quarter to which they relate. Within 3 months of project completion, the PIU will submit to ADB a project completion report.

#### **6. Clean Development Mechanism Credits**

58. By decreasing technical losses of the transmission and distribution systems in Viet Nam, the project has good chances to be eligible for carbon credit revenues. Assessment and development of the corresponding documentation will be explored during project implementation.

#### **G. Financial Performance of Viet Nam Electricity**

59. Based on EVN's audited financial statements of 2006–2008, EVN's financial performance during the last 3 years was analyzed. EVN's profit after tax increased from D2.26 trillion in 2006 to D3.34 trillion in 2007, but decreased to D1.29 trillion in 2008. This is due mainly to high domestic borrowing costs and high fuel costs in 2008. In addition to these high costs, in 2008 EVN incurred a large foreign exchange loss due to depreciation of the dong against the dollar and yen.

60. In the longer term, EVN's challenge will be to maintain its financial strength given the high investment requirement in the power sector. Electricity demand was affected by the global economic crisis, and demand growth slowed in 2008–2009. However, the demand for electricity is expected to continue to grow strongly after 2010 as Viet Nam continues its industrialization and modernization of its economy. EVN's total investment requirement for 2009–2015 is \$20.56 billion (60.7% of which will be invested in generation, 22.3% in transmission, and the remainder in distribution).

61. Cognizant of this challenge, the government has taken several measures to assist EVN to strengthen its financial performance. One important measure was the tariff increase effective 1 March 2009,<sup>15</sup> when the retail tariff was increased on average by 8.9%. The adjusted average tariff is D950/kWh. More importantly, the decision allows for future annual tariff adjustments based on market conditions. The Ministry of Finance and Ministry of Industry and Trade are responsible for issuing guidelines for tariff adjustment in the future. This tariff adjustment process will be implemented starting in 2010. Another measure to assist EVN to strengthen its financial status is the approval by the government for EVN to increase its capital. Currently EVN's aggregate capital is D64 trillion. In June 2009, the government approved a plan for EVN to increase its capital to D110 trillion in 2010, and EVN is working on appropriate measures to achieve this. With increased capital, EVN will be able to mobilize more resources while maintaining the debt–equity ratio. Detailed analysis of the power subsector is in Appendix 3.

#### IV. TECHNICAL ASSISTANCE

62. A \$720,000 advisory technical assistance project will be provided to ensure compliance with ADB's requirements in terms of procurement and environmental and social safeguards policies. The technical assistance will be financed through the Technical Assistance Special Fund (TASF-others, \$600,000). EVN and its subsidiaries will provide \$120,000 in-kind (office space and counterpart staff remuneration and per diem). EVN will be the executing agency for the technical assistance and its subsidiaries will be the implementing agencies. The technical assistance consultants will be selected and engaged by ADB in accordance with ADB's Guidelines on the Use of Consultants (2007, as amended from time to time). The disbursement will be made in accordance with ADB's Technical Assistance Disbursement Handbook.<sup>16</sup> The technical assistance is expected to commence in January 2010 and finish in December 2013. Detailed description of the technical assistance is provided in Supplementary Appendix H. Outline terms of reference for consultants are provided in Appendix 8.

#### V. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS, AND RISKS

##### A. Project Justification

63. In addition to filling a funding gap for EVN at a time when commercial lending in Viet Nam has diminished considerably due to the global financial crisis, the commercial banks have indicated that they would be unwilling to make a long-tenor loan to EVN without a credit enhancement by ADB. Further, as a large proportion of the equipment (about 80%) is being sourced within Viet Nam, the commercial banks cannot insure a significant portion of EVN's payment risk with an export credit agency. Hence, without ADB involvement, private political risk insurers might be willing to provide insurance on terms and conditions that would probably not be acceptable to EVN. Therefore ADB's involvement in the project is essential.

64. ADB's guarantee will help reduce EVN's cost of borrowing and increase the tenor of the loan. Hence, relying on ADB's AAA credit rating, the commercial banks will provide a longer tenor loan than they normally would for this type of project and they will also reduce their margin based on ADB's credit rating. Finally, ADB's involvement in the project will also encourage private insurers to provide insurance for that portion of the loan not guaranteed by ADB, on more competitive terms and at a lower cost to EVN, further reducing EVN's cost of funding.

65. Providing a guarantee to a commercial bank is in line with ADB's operational strategy to promote private sector participation in infrastructure development as well as offer guarantee products

<sup>15</sup> PM decision No. 21/2009/QD-TTg.

<sup>16</sup> Asian Development Bank. 2007. *Technical Assistance Disbursement Handbook*. Manila

for sovereign projects. ADB also encourages risk participation with other guarantors and insurers, both public and private.

66. All proposed subprojects are included in the National Power Master Plan No. VI which was approved by the government in 2006. The financial assessment of subprojects is conducted by estimating the economic internal rate of return (EIRR) and the financial internal rate of return (FIRR). Feasibility studies under this guarantee program are prepared by subsidiaries of EVN in accordance with the government regulation. The government decree<sup>17</sup> provides the guideline for the preparation of feasibility studies. Appendix 7 explains the government guidelines and criteria for the feasibility study of subprojects, and show economic and financial assessments, prepared by EVN staff, of the 220 kV Trang Bang–Tay Ninh transmission line subproject as a case model. The EIRR is 34.2% and the FIRR is 17.5%, compared with the project weighted average cost of capital (WACC) of 10.45%. Sensitivity analysis indicates that both the EIRR and FIRR will exceed the WACC under the event of cost overrun of 10% and 20%. Given the overall objectives of the subproject, the economic and financial performance is deemed acceptable, and the subproject is considered financially viable and sustainable. For consistency purposes in undertaking such analysis for the other subprojects, a methodology has been developed for the use of EVN's staff and is provided as Supplementary Appendix I.

## **B. Environmental and Social Safeguards**

### **1. Resettlement**

67. Based on the available technical designs for the 66 proposed subprojects, it is expected that 32 will not require land acquisition. These are not expected to require land acquisition due to their small scale, location within existing corridors and rights of way, technical capability to avoid impacts, location within public land (roads, etc.) or on land specifically identified and reserved for the purpose. These projects have been categorized as follows: (i) extension of transformation capacity or upgrading of existing substations (9 subprojects), (ii) rehabilitation and upgrading of existing rural grids (5 subprojects), (iii) rehabilitation or upgrading of urban overhead lines (2 subprojects), (iv) installation of underground cables under sidewalks or in the streets (3 subprojects); (v) new substations to be constructed within existing industrial zones (10 subprojects); or (vi) new substations to be constructed on land vacated by former state enterprises (3 subprojects). It is acknowledged that, although the probability of resettlement impacts are low with these types of projects, if land acquisition and resettlement impacts are unavoidable, resettlement plans would need to be prepared in accordance with the approved resettlement framework.

68. For the remaining 34 subprojects, some, marginal resettlement impacts are expected. According to the available technical designs, the development of the proposed new substations (21 subproject), transmission lines (12 subprojects), and the development of rural grids (1 subprojects) will require an aggregate amount of about 60.4 hectares (ha) of land and has the potential to impact 1,800–1,900 households. ADB due diligence has found power companies and their consultants have worked in close cooperation with local authorities from a very early stage of project preparation to avoid, or at least minimize, the acquisition of land and the negative impacts on assets and livelihoods of local communities. During the selection of sites for new substations and the design of new distribution and transmission line routes, priority was given to land which has a low economic value and which is not used for residential or livelihood purposes. Site locations are proposed on public or collective unit lands wherever possible to avoid impacts on privately owned or used lands. In addition, the technical designs proposed attempt to minimize the impact by recommending the use of low-impact technology such as gas-insulated substations (GISs), the use of steel poles instead of lattice towers, and the use of underground cables.

<sup>17</sup> Decree No.12/2009/ND-CP of February 12 2009 on management of investment projects on the construction of works.

69. Despite the design attempts to avoid resettlement impacts, some unavoidable impacts will be created on agricultural land (in low land), forest (in upland areas), unused public land, and/or public domains. A small amount of residential land (some with houses or secondary structures) may be affected by the rights of way of the transmission lines. In addition to these potential impacts on residential land, some project-affected people may experience severe impacts created by the loss of more than 10% of their productive agricultural landholding. The precise number of affected people and severely affected people will only be known when the detailed technical designs and measurement surveys are completed. However, based on available information, no proposed subprojects are expected to create significant resettlement impacts as defined by ADB's Involuntary Resettlement Policy (1995). All proposed subprojects involving involuntary resettlement are classified as category B and will require short resettlement plans that will be submitted to ADB for review and clearance before the civil works can start.

70. Two core subprojects (Le Thien 110 kV substation and the Tien Lang 110 kV transmission line project) have been fully appraised, including the preparation of resettlement plans and initial environmental examinations. This documentation has been prepared to meet the requirements of the resettlement framework and the environmental assessment and review framework which have been prepared for the project.

71. The summary of the resettlement framework is provided in Appendix 6 and the full resettlement framework is provided as Supplementary Appendix A, The resettlement plans for the two core subprojects are provided in Supplementary Appendix B and the due diligence report on resettlement for six subprojects for which land acquisition and resettlement has been completed is provided in Supplementary Appendix C.

## **2. Environmental Impact**

72. The transmission and distribution project will have 66 subprojects located in 30 provinces in Viet Nam. The subprojects comprise (i) constructing new transmission conventional substations; (ii) rehabilitating, upgrading, and extending 500 kV, 220 kV, and 110 kV conventional substations; (iii) constructing new GISs; (iv) extending existing GISs; (v) constructing new distribution lines and 220 kV and 110 kV overhead transmission lines; (vi) installing underground cables; and (vii) rehabilitating urban and rural distribution networks or grids. The initial environmental examination (IEE) prepared for the project covers subprojects with available feasibility studies, while an environmental assessment and review framework has been prepared for subprojects where the location, alignment, and components are still uncertain. An initial environmental examination (IEE); review framework; and initial environmental examinations have been prepared for representative subprojects. In addition one due diligence report has been prepared for a completed subproject.

73. None of the subprojects will be in ecologically or culturally sensitive sites. Affected areas are primarily agricultural land planted to rice and various crops as well as tree plantations (acacia, rubber trees, eucalyptus), land in urban areas, or idle plots. For the transmission route in Song May–Uyen Hung (in the provinces of Dong Nai and Binh Duong), some mature trees will need to be removed as the alignment will pass through acacia and rubber tree plantations. The other high-voltage transmission line routes will involve cutting of small diameter trees and will mainly traverse agricultural land. Underground cables will be installed following road alignments in urban areas. The land required for each new conventional substation is estimated as follows: (i) 500 kV substation, 12 ha; (ii) 220 kV substation, 0.9–3.6 ha; and (iii) 110 kV substation, 0.24–0.76 ha. The land requirement for new GISs will be 0.1–0.3 ha each. The total area for all new substations will be a maximum of about 46 ha. Acquisition of land for extending existing conventional substations and constructing GISs will not be required as this will be within existing EVN substation areas. Additional land, which will be a combination of privately owned and public land, may be acquired for access roads.

74. For installation of underground cables, only temporary impacts are expected to occur during the construction phase. Methods to be adopted for installation of underground cables will be either boring (across road intersections and very narrow streets) or by trenching (dig and fill). The underground cables will be installed 1.0–2.5 meters (m) below ground level. The excavation width for trenching is 1.5 m and, depending on the decision of the local government, this will be undertaken either on the road carriageway or on the sidewalk. The underground cable subprojects are located in urban areas. Rehabilitation of medium- and low-voltage grids in urban and rural areas are expected to cause only minor impacts during site works. Activities will include reconductoring of existing electric poles as well as installation of additional wooden poles on agricultural fields, public land, and along the roads. Earthworks, dust emission, and dust generation will be minimal during pole installation since excavation will be done manually over a small area of only 1 square meter (m<sup>2</sup>) per pole.

75. The environmental assessment has identified environmental impacts associated with the implementation of the various subprojects. Such impacts pertain to dust emission, noise generation, siltation of nearby surface water bodies due to surface run-off, spill or leak of hazardous substances such as fuel and oil, clearing of vegetation (particularly for installation of high-voltage transmission lines), and traffic congestion. Predicted impacts will be largely experienced during the construction phase and are considered temporary. The environmental assessment includes environmental mitigation measures, and corresponding monitoring activities and institutional responsibilities to ensure that impacts are reduced to acceptable levels. The summary IEE is provided in Supplementary Appendix L, the IEEs for the two core subprojects are provided in Supplementary Appendix D, and the environmental assessment and review framework is provided in Supplementary Appendix E.

### **3. Social Impact**

76. The social assessment in the project areas show that electricity problems, shortage of electricity, unreliable power voltage, and power cuts have implications for industry, business, home industry, health, and education facilities. Viet Nam is shifting away from a centrally planned economy to a more market-oriented economy. Industries, services, and businesses are booming. In the subproject areas, there are many small businesses such as restaurants, cafes, karaoke bars, and food processing plants, and these business activities are a major source of income for local entrepreneurs. However, these businesses require large amounts of reliable and stable power, and power cuts and voltage fluctuation have significant negative impacts on local businesses. For example, in Nam Sach district, a food processing plant (soy curd) can lose D5 million a night due to power cuts. Some entrepreneurs use generators for their businesses but most of them does own generators and are suffering of production losses. Farmers use electric water pumps for irrigation. However, due to unstable and insufficient power supply, they sometimes use diesel-powered water pumps which cost three times as much to run. Big enterprises such as in the shrimp industry can lose several thousand dollars a day due to power cuts. Workers can also lose income due to power cuts. In the subproject areas there are 21 industrial zones in food processing, shipping, coal exploitation, garment industries, etc. Although these industrial sites have private power lines, breakdowns due to overloading and old cables result in power cuts 5–7 days a month. Some big industries have to buy-high volume power generators, and in some cases garment factories have to replace automatic machines with manual ones. The summary poverty reduction and social strategy is outlined in Appendix 5.

77. Electrical power supply is usually cut off during the hot periods in summer. In addition, electricity quality is not stable and reliable. Due to inadequate electric supply, domestic equipment such as TVs, cooking stoves, and electric lamps can not be operated. Because of power cuts and insufficient power, clean water factories in some communes and wards in Hai Duong province are not working. As a result, 80% of households do not have clean water. Women bear the burden of electricity problems. Instead of using electricity for cooking, they have to use firewood, straw, charcoal, or dried leaves. The commune leaders advised that, during power cuts, around 70%–80% of

the population have no fresh water, and water must be carried by shoulder poles from public wells—a burden which is generally taken up by women.

78. In recent years, with the economic development the health facilities have been equipped with modern amenities. The inadequate electrical power supply causes difficulties in medical practices such as medical checks, surgery, preservation of medicine, etc. In some project areas, such as Tien Lang, Hai Phong, because there are power cuts for 7–10 days in a month, diesel-power generators were bought, which increases the cost of providing medical services. Despite the government attempts to invest in more human resources, medications, and facilities in hospitals, medical centers, and clinics in the rural areas, rural people still have to go to provincial hospitals because of poor power supply in the rural health centers. This has resulted in more pressure on hospitals and health facilities at the provincial level. The power cuts in schools and colleges disturb laboratory work for the students and the teaching process, and affect the quality of learning.

79. At an individual level, low-quality power supply introduces some extra cost for middle-income consumers, as the life span of electric appliances is reduced. The investments for construction of new 220 kV and 110 kV substations and upgrading and rehabilitating the rural grid network will facilitate adequate and reliable electricity supply for individual customers, industries, businesses, public facilities, etc. The supply of adequate and reliable electricity will increase business opportunities for manufacturing and hotels, and will provide employment opportunities. The negative impact of the project relates to resettlement activities such as land acquisition. The resettlement plan includes mitigation measures for the affected people.

80. Ethnic minority groups such as Khmers, K'ho, Chu ru, Tay, and Nung live in the areas of the Duc Trong 220 kV substation and its connecting lines as well as near the Tra Vinh 220 kV substation and the Dai Tu 110 kV transmission line. The ethnic minority groups are integrated into mainstream society, and so the resettlement impacts on ethnic minority groups are no different than for the main Kinh ethnic group. To ensure that ethnic minority people will not be marginalized during the process of resettlement, ethnic minority-specific action is included in the resettlement framework.

### C. Risks

81. The primary risks of the ADB guarantee are (i) the credit risk of EVN, (ii) foreign exchange risks, and (iii) the ability of the Government to honor its obligations to the commercial banks under the MOF guarantee. EVN's failure to pay under the commercial banks' loan could trigger a call on the MOF guarantee, which could result in a demand under the ADB guarantee. These risks will be mitigated by (i) the sovereign indemnity provisions in the MOF guarantee that will obligate Viet Nam to reimburse ADB for payments ADB makes to the commercial banks' pursuant to the ADB guarantee, and (ii) the annual revision of the tariffs that will reflect changes in both fuel costs and local inflation. In addition, in March 2009, Viet Nam introduced an annual tariff adjustment under the proposed competitive power generation market, which will also mitigate some of the risks to the project.

82. **Risks for Viet Nam Electricity and its subsidiaries.** This project involves conventional technology and EVN and its subsidiaries have all the necessary technical skills to design and implement the transmission systems. The suppliers of equipment will be selected in a competitive manner from among ADB's member countries, which from experience includes European and Asian manufacturers. The proposed project is considered sound and capable of withstanding changes in major parameters. Institutional risks are not considered significant as EVN has a comprehensive organizational structure at its central headquarters and branch offices in main cities in Viet Nam. In many ways, EVN is a well-run utility. Its operating costs are low, transmission and distribution losses are reasonable, and revenue collection is good. The due diligence conducted in the 11 subsidiaries shows that all of them have experience with multilateral and bilateral institutions such as ADB, Agence Française de Développement, Japan International Cooperation Agency, or the World Bank, and thus are familiar with the concept of competitive bidding.

83. EVN's tariff revenues are in dong whilst the loan from the commercial banks will be in foreign currencies, thus creating a currency mismatch. This can be seen as a risk, especially in light of EVN's experience in FY2008 where currency mismatch caused EVN to breach its financial covenants under its existing loans. However, due to the adoption of resolution No. 272 of February 2009, tariffs will be revised annually and adjusted to the current economic situation. In addition, the introduction of a generation competitive market in 2010 and of a retail competitive market later on can be seen as a stabilization factor in the medium-to-long term.

84. **Economic stability.** The debt sustainability analysis carried out by the International Monetary Fund and the World Bank in February 2009 shows that Viet Nam remains at low risk of debt distress despite the recent deterioration in its economic conditions and the global downturn. All external debt sustainability indicators are projected to remain well below the applicable debts threshold. Total public debt, however, is expected to be adversely affected by the ongoing global downturn. Public debt will also be affected by the government stimulus plan to mitigate the economic slowdown. However, provided the package is prudently financed, the burden of public debt could be manageable.

#### **D. Anticorruption Policy, and Combating Money Laundering and the Financing of Terrorism**

85. The commercial banks and EVN were advised of ADB's Anticorruption Policy (1998, as amended to date) and the Combating of Money Laundering and the Financing of Terrorism Policy (2003). Consistent with its commitment to good governance, accountability, and transparency, ADB will require the commercial banks' and EVN 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 the commercial banks and between the commercial banks and EVN will further allow ADB to investigate any violation or potential violation of these undertakings.

## **VI. ASSURANCES**

### **A. Specific Assurances**

86. EVN will give the following assurances, which will be incorporated into the legal documentation:

- (i) EVN will comply with ADB's Anticorruption Policy and the Combating Money Laundering and the Financing of Terrorism Policy. EVN will (a) acknowledge ADB's right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the project; (b) agree to cooperate fully with any such investigation and to extend all necessary assistance, including providing access to all relevant books and records, as may be necessary for the satisfactory completion of any such investigation; and (c) agree to refrain from engaging in money laundering activities or financing of terrorism and shall allow ADB to investigate any violation or potential violation of these undertakings.
- (ii) EVN will (a) construct and operate the Project in accordance with the IEE approved by ADB, (b) comply with the environmental laws and regulations of the Government, and (c) comply with ADB's Environment Policy (2002). In the case of discrepancies between the requirements under the environmental laws and regulations of the Government and ADB's Environment Policy, EVN will comply with ADB's Environment Policy.
- (iii) EVN will ensure that any involuntary resettlement will be carried out in accordance with the agreed resettlement plan, ADB's Involuntary Resettlement Policy (1995), and the

- relevant laws on involuntary resettlement of the Government. In the case of discrepancies between the requirements under the laws and regulations of the Government on involuntary resettlement with ADB's Involuntary Resettlement Policy, EVN will comply with ADB's Involuntary Resettlement Policy.
- (iv) EVN will ensure that implementation of ethnic-minority-specific action included in the resettlement plan and resettlement framework is in accordance with the applicable laws and regulations of the Government and ADB's *Policy* on Indigenous Peoples (1998).
  - (v) EVN will ensure that all works contracts under the Project incorporate provisions and budgets to the effect that contractors (a) comply with the applicable labor laws of the Government and related international treaty obligations and do not employ child labor; (b) provide safe working conditions and water and separate sanitation facilities for male and female workers in the construction camps and in the construction sites; (c) provide equal wages to male and female workers for work of equal value; (d) provide child day care services for female construction workers; (e) recruit local labor for construction work; and (f) undertake HIV/AIDS and human-trafficking education and awareness campaigns in the construction camps, other risk groups and villages, and in the constructions sites, labor camps, and surrounding villages.
  - (vi) EVN will ensure that the gender strategy provided in the resettlement plan is undertaken to minimize adverse resettlement-related impacts, including the undertaking of the following specific actions: (a) a separate consultation meeting will be held to disclose the resettlement plan, (b) replacement land will be registered in the names of both husband and wife in cases where land acquisition has taken place, (c) compensation money will be paid to both husband and wife, and (d) women will be consulted in planning and training for income restoration programs.

## **B. Conditions for Guarantee Effectiveness**

87. The ADB guarantee will become effective upon the execution and delivery by MOF, on behalf of the Government of Viet Nam, and Viet Nam of the MOF guarantee, which will incorporate the MOF guarantee and the sovereign counter-indemnity provisions, all to the satisfaction of ADB.

## **VII. RECOMMENDATION**

88. I am satisfied that the proposed ADB guarantee would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the guarantee of up to \$500,000,000 covering certain payment obligations of the Ministry of Finance of the Government of Viet Nam under a guarantee issued in connection with commercial loans to EVN under EVN's Investment Support Program, where ADB's obligations under the guarantee will, in turn, be counter-indemnified by the Socialist Republic of Viet Nam; and on such terms and conditions as are substantially in accordance with those set forth in this report as presented to the Board.

Haruhiko Kuroda  
President

20 November 2009

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources / Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> Adequate, reliable, and improved quality of electricity supply to meet industrial, commercial, and residential consumer demands</p>	<p>Enhance energy efficiency by reducing transmission losses below 10% level in Viet Nam by 2012.</p> <p>100% of households connected to electricity by 2018</p>	<p>National electricity statistics</p>	<p><b>Assumption</b> More investments made not only in generation but also in transmission and distribution</p> <p>Delay in the implementation of the competitive power market</p>
<p><b>Outcome</b> Increased transmission and distribution grids capacity</p>	<p><b>Regional Power Company No. 1 (PC1)</b> Losses decreases from 8% in 2008 to 7.4% in 2010 and 7.3% in 2011. Sales increases from 14,630 GWh in 2008 to 15,250 GWh in 2010 and 17,560 GWh in 2011.</p> <p><b>Regional Power Company No. 2 (PC2)</b> Losses decreases from 7.2% in 2008 to 7.0% in 2010 and 6.8% in 2011. Sales increases from 16,970 GWh in 2008 to 18,950 GWh in 2010 and 20,850 GWh in 2011.</p> <p><b>Hanoi Power Company (HPC)</b> Losses decreases from 8% in 2008 to 7.8% in 2010 and 7.5% in 2011. Sales increases from 7,540 GWh in 2008 to 9,580 GWh in 2010 and 11,000 GWh in 2011.</p> <p><b>Hai Duong Power Company (HDPC)</b> Losses decreases from 5.8% in 2008 to 5.7% in 2010 and 5.6% in 2011. Sales increases from 1,550 GWh in 2008 to 1,650 GWh in 2010 and 1,780 GWh in 2011.</p> <p><b>Ninh Binh Power Company (NBPC)</b> Losses decreases from 6.6% in 2008 to 6.0% in 2010 and 5.5% in 2011. Sales increases from 710 GWh in 2008 to 820 GWh in 2010 and 840 GWh in 2011.</p> <p><b>Hai Phong Power Company (HPPC)</b> Losses decreases from 4.1% in 2008 to 4.0% in 2010 and 3.9% in 2011. Sales increases from 2,300 GWh in 2008 to 2,450 GWh in 2010</p>	<p>Annual reports of EVN</p> <p>EVN and Power Companies audited financial statements</p> <p>Electricity statistics published by MOIT</p>	<p><b>Assumption</b> Efficient operation and maintenance of new facilities New power generation will be added as planned</p> <p><b>Risks</b> The global financial crisis continue in 2010 and 2011 Project is delayed</p>

Design Summary	Performance Targets/Indicators	Data Sources / Reporting Mechanisms	Assumptions and Risks
	<p>and 2,800 GWh in 2011.</p> <p><b>Da Nang Power Company (DaNPC)</b> Losses decreases from 4.4% in 2008 to 4.3% in 2010 and 4.2% in 2011. Sales increases from 997 GWh in 2008 to 1,100 GWh in 2010 and 1,250 GWh in 2011.</p> <p><b>Khanh Hoa Power Company (KHPC)</b> Losses decreases from 6.9% in 2008 to 6.7% in 2010 and 6.6% in 2011. Sales increases from 873 GWh in 2008 to 930 GWh in 2010 and 1,000 GWh in 2011.</p> <p><b>Dong Nai Power Company (DoNPC)</b> Losses decreases from 3.6% in 2008 to 3.5% in 2010 and 2011. Sales increases from 4,831 GWh in 2008 to 5,100 GWh in 2010 and 5,400 GWh in 2011.</p> <p><b>Ho Chi Minh Power Company (HCMPC)</b> Losses decreases from 6.2% in 2008 to 6.1% in 2010 and to 6.0% in 2011. Sales increases from 12,365 GWh in 2008 to 13,500 GWh in 2010 and 15,000 GWh in 2011.</p>		
<p><b>Outputs</b></p> <p><b>1. National Power Transmission Corporation (NPT)</b> 500kV and 220 kV transmission systems expanded by 2012</p> <p><b>2. Regional Power Company No. 1 (PC1)</b> 110 kV transmission system expanded and distribution system rehabilitated and upgraded by 2011</p> <p><b>3. Regional Power Company No. 2 (PC2)</b> construction of 110 kV transmission lines, and increased</p>	<p><b>NPT:</b> addition of 18 km of 500 kV transmission lines, 270 km of 220 kV transmission lines, 500 kV and 220 k substations with total capacity of 3,400 MVA</p> <p><b>PC1:</b> addition of about 59 km of 110 kV transmission lines, and of 373 MVA of transformation capacity in the 110 kV substations. In addition, the PC1 will rehabilitate rural distribution networks including medium- and low-voltage networks in 544 communes in Northern provinces.</p> <p><b>PC2:</b> Addition of 16 km of 110 kV transmission lines, and addition of 206 MVA of transformation capacity of in the 110 kV substations.</p>	<p>EVN project monthly progress reports</p> <p>Commercial Banks reports</p>	<p><b>Assumptions</b></p> <p>Satisfactory completion of land acquisition and right of way</p> <p>Procurement of quality equipment, works and materials</p> <p>Adherence to environmental and social safeguards</p> <p>MOF to issue a sovereign guarantee to commercial banks including a cross defect provision to the satisfaction of ADB</p> <p><b>Risks</b></p> <p>Inadequate project management</p> <p>EVN counterpart funding not available</p> <p>High foreign exchange</p>

Design Summary	Performance Targets/Indicators	Data Sources / Reporting Mechanisms	Assumptions and Risks
<p>transformation capacity in existing 110kV substations. By 2011</p> <p><b>4. Hanoi Power Company (HNPC)</b> 110 kV transmission system expanded and distribution system rehabilitated and upgraded by 2011</p> <p><b>5. Hai Duong Power Company (HDoPC)</b> 110 kV transmission system expanded by 2011</p> <p><b>6. Ninh Binh Power Company (NBPC)</b> 110 kV transmission system expanded by 2011</p> <p><b>7. Hai Phong Power Company (HPPC)</b> 110 kV, medium and low voltage systems expanded by 2011</p> <p><b>8. Da Nang Power Company (DaNPC)</b> 110 kV and medium – voltage systems expanded by 2011</p> <p><b>9. Khanh Hoa Power Company (KHPC)</b> 110 kV and medium systems expanded by 2011.</p> <p><b>10. Dong Nai Power Company (DoNPC)</b> 110 kV transmission system expanded by 2011.</p> <p><b>11. Ho Chi Minh Power Company</b></p>	<p><b>HNPC:</b> Addition 191 MVA of transformation capacity in existing 110 kV substations and rehabilitation and upgrade of urban and rural distribution systems.</p> <p><b>HDoPC:</b> Addition of 14 km of 110 kV transmission lines and rehabilitation of distribution grid in one district.</p> <p><b>NBPC:</b> Addition of 50 MVA of transformation capacity in the 110 kV substations</p> <p><b>HPPC:</b> Addition of 33 km of 110 kV transmission lines and addition of 218 MVA of transformation capacity in the 110 kV substations, construction of about 32 km of 22/35 kV medium–voltage transmission lines, and 33 km of 0.4 kV low–voltage distribution lines.</p> <p><b>DaNPC:</b> Addition of 5 km of 110 kV transmission lines, addition of 65 MVA of transformation capacity in the 110 kV substations and expansion of the 22 kV medium–and low–voltage systems.</p> <p><b>KHPC:</b> Addition of 4km of 110 kV transmission lines, increase by 25 MVA of the transformation capacity of in existing 110 kV substations.</p> <p><b>DoNPC:</b> Addition of 8 km of 110 kV transmission lines, and addition of 229 MVA of transformation capacity in existing 110 kV substations.</p> <p><b>HCMPC:</b> Addition of 23 km of 110 kV transmission lines, and</p>		<p>fluctuations</p> <p>Governance issues may result in not achieving the expected output</p>

<b>Design Summary</b>	<b>Performance Targets/Indicators</b>	<b>Data Sources / Reporting Mechanisms</b>	<b>Assumptions and Risks</b>
<p>(HCMPC) 110 kV system expanded by 2011.</p> <p>12. Implementation of the above output in compliance with ADB safeguards policies and procurement guidelines</p>	<p>increase by 126 MVA of transformation capacity in existing 110 kV substations</p> <p>All subprojects comply with ADB requirement and are financed under ADB guaranteed loan.</p>		
<p><b>Activities with Milestones</b></p> <p>1.1 \$9.3 million disbursed by 31 December 2010  1.2 \$77.3 million disbursed by 31 December 2011  1.3 \$56.6 million disbursed by 31 December 2012</p> <p>2.1 \$41.3 million disbursed by 31 December 2010  2.2 \$53.2 million disbursed by 31 December 2011</p> <p>3.1 \$2.1 million disbursed by 31 December 2010  3.2 \$8.6 million disbursed by 31 December 2011</p> <p>4.1 \$3.4 million disbursed by 31 December 2010  4.2 \$29.9 million disbursed by 31 December 2011</p> <p>5.1 \$4.8 million disbursed by 31 December 2010  5.2 \$1.6 million disbursed by 31 December 2011</p> <p>6.1 \$1.1 million disbursed by 31 December 2010  6.2 \$1.2 million disbursed by 31 December 2011</p> <p>7.1 \$2.1 million disbursed by 31 December 2010  7.2 \$17.6 million disbursed by 31 December 2011</p> <p>8.1 \$0.5 million disbursed by 31 December 2010  8.2 \$3.3 million disbursed by 31 December 2011</p> <p>9.1 \$3.0 million disbursed by 31 December 2010  9.2 \$0.5 million disbursed by 31 December 2011</p> <p>10.1 \$3.2 million disbursed by 31 December 2010  10.2 \$2.3 million disbursed by 31 December 2011</p> <p>11.1 \$19 million disbursed by 31 December 2010</p> <p>12. Continuous review and reporting from January 2010 to 2014 (2 years after the completion of the project)</p>			<p><b>Inputs</b></p> <p>A \$325 million ADB guarantee to a syndication of commercial banks.</p> <p>EVN counterpart funding of \$202 million..</p> <p>A MOF guarantee to the commercial banks and ADB for \$342 million.</p> <p>A commercial loan from a syndication of commercial banks to EVN for \$342 million.</p> <p>A \$600,000 TA grant for implementation supervision consultant on procurement and safeguards</p> <p>\$120,000 in kind financed by EVN and its subsidiaries as office accommodation and counterpart staff for the TA</p>

ADB = Asian Development Bank, EVN = Viet Nam Electricity, GWh = gigawatt-hour, kV = kilo volt, MOF = Ministry of Finance, MOIT = Ministry of Industry and Trade, MVA = megavolt-ampere, TA = technical assistance.  
Source: Asian Development Bank.

## FINANCIAL PERFORMANCE AND PROJECTIONS OF VIET NAM ELECTRICITY

### A. Introduction

1. The past and projected financial statements of Viet Nam Electricity (EVN) have been prepared. The financial results are for the 3 years 2006–2008, and are based on audited financial statements. The projected financial statements for 2009–2015 are prepared in current terms.

2. As at 31 December 2008, the aggregate capital of EVN was D64 trillion. In June 2009, the government approved to increase EVN's capital to D110 trillion, with a revaluation of existing assets. EVN has 39 subsidiaries and 20 dependent units (power plants, power project management boards, and centers).

### B. Financial Performance of Viet Nam Electricity

3. **FY2008 results.** The financial performance of EVN in 2006–2008 is summarized in Table A2.1. In 2008, EVN's profit after tax decreased from D3,336 billion in 2006 to D1,287 billion in 2008 mainly due to high fuel costs and high domestic borrowing costs. As a result, EVN did not meet financial covenants relating to the self-financing ratio (25% minimum) and debt service coverage ratio (1.5 minimum). Long-term debt has increased from 54% to 65%, which is close to the covenant ceiling of 70%.

**Table A2.1: Past Financial Performance of EVN**  
(D billion)

Item	2006	2007	2008
<b>Income Statement</b>			
Revenues	44,917	58,106	64,656
Cost of sales	(37,256)	(48,328)	(55,654)
Gross profit from sales	7,661	9,778	9,002
Financial expenses	(2,537)	(3,477)	(4,856)
Selling expenses	(1,307)	(1,758)	(1,961)
Administration expenses	(2,111)	(2,568)	(2,555)
Net profit from operations	2,462	3,354	1,384
Profit before tax	2,606	4,217	1,536
Corporate income tax	(365)	(1,112)	(511)
<b>Profit After Tax</b>	<b>2,256</b>	<b>3,336</b>	<b>1,287</b>
<b>Balance Sheet</b>			
Current assets	39,723	49,814	47,643
Noncurrent assets	98,059	135,097	157,379
Fixed assets	96,074	129,201	149,130
Long-term investments	861	3,170	5,331
<b>Total Assets</b>	<b>137,783</b>	<b>184,910</b>	<b>205,022</b>
Liabilities	83,335	106,904	136,545
Current liabilities	19,602	25,601	25,649
Long-term liabilities	63,733	81,302	110,897
Equity	54,447	78,007	64,160
<b>Total Liabilities and Equity</b>	<b>137,783</b>	<b>184,910</b>	<b>205,022</b>
<b>Financial Ratio Covenants</b>			
Self-financing ratio	19.8%	44.1%	15.5%
DSCR	2.13	1.86	1.37
Debt to equity ratio	57:43	54:46	65:35

( ) = negative, DSCR = debt service coverage ratio, EVN = Viet Nam Electricity.  
Source: Viet Nam Electricity.

4. **Electricity demand.** As Viet Nam continues to industrialize and modernize its economy, high electricity demand is expected to continue. The majority of increased demand comes from the

industry sector, which accounted for 50.3% of demand in 2008, reflecting the importance of Viet Nam's emerging manufacturing and industrial base. Affected by the current global financial crisis, the economic growth of Viet Nam in 2009 is forecasted to decline. However, demand for electricity is expected to continue to grow strongly in the coming years. It is expected that electricity demand will increase by 10% in 2009. Table A2.2 provides the power demand by economic sectors from 2003–2008.

**Table A2.2: Power Demand by Economic Sectors, 2003–2008**  
(billion kWh)

Item	2003	2004	2005	2006	2007	2008
Industrial	15,290	17,890	20,553	24,290	29,218	33,154
Agricultural	560	546	578	559	574	651
Residential	15,952	17,618	19,674	22,014	23,793	26,518
Commercial	1,513	1,789	2,200	2,476	2,805	3,219
Others	1,568	1,750	1,830	1,953	2,046	2,346
<b>Total</b>	<b>34,885</b>	<b>39,596</b>	<b>44,836</b>	<b>51,295</b>	<b>58,438</b>	<b>65,890</b>
Sales Growth	—	13.5%	13.2%	14.4%	13.9%	12.8%

Source: Viet Nam Electricity.

5. **Capital expenditure requirements.** Despite increased participation in the power industry by private investors, EVN anticipates considerable capital expenditure in the coming years. During 2009–2013, EVN plans to invest approximately \$20.5 billion, with power generation accounting for 60.7% of that planned investment and power transmission accounting for 22.3%.

**Table A2.3: Viet Nam Electricity's Capital Expenditure Plan, 2009–2013**  
(\$ million)

Item	2009	2010	2011	2012	2013	Total
Generation	1,434	2,985	2,841	2,380	2,855	12,495
Transmission	348	886	1,144	1,170	1,044	4,592
Distribution	300	560	547	576	604	2,587
Others	280	167	165	148	133	892
<b>Total</b>	<b>2,362</b>	<b>4,597</b>	<b>4,697</b>	<b>4,274</b>	<b>4,636</b>	<b>20,565</b>

Source: Viet Nam Electricity.

6. **Tariff adjustment.** By decision No. 21/2009/QĐ-TTg of the government with effect from 1 March 2009, the electricity retail tariff was increased by, on average, 8.92% as compared to the tariff for 2008. The adjusted average tariff is D948.5/kilowatt-hour (kWh). The Ministry of Finance and the Ministry of Industry and Trade will issue guidelines for the tariff increasing mechanism. The tariff increase is a crucial step that will enable EVN to grow strongly and help it to cover sufficiently its operational costs and capital requirements. After 2010, EVN's electricity selling prices will be adjusted annually under the market-based mechanism. Such adjustments of the electricity selling prices are subject to approval of state authorities (the prime minister, Ministry of Industry and Trade and Ministry of Finance) if increases of more than 5% are required.

7. **Foreign exchange risks.** EVN has a number of loans denominated in foreign currencies such as yen or dollars. However, EVN has not hedged against the exchange rate risk, especially in the case of an appreciation of the yen or of the dollar against the dong due to limited market liquidity. Thus, a significant change in the exchange rate between dong and those currencies may adversely affect the results of the operations of EVN. In 2008, EVN made a foreign exchange loss of D10.6 trillion based on International Accounting Standards.

### C. Projected Financial Performance of Viet Nam Electricity

8. Projected financial statements for 2009–2015 have been prepared. Major assumptions are as follows:

- (i) the average tariff is \$0.056–\$0.057 (D1,003–D1,146) per kWh;
- (ii) energy sales growth averages 13.7% per annum;
- (iii) fuel costs are \$667 per ton for diesel oil, \$429 per ton for fuel oil, and \$23 per ton for domestic coal;
- (iv) the projected exchange rate for 2009–2015 is D18,775 = \$1; and
- (v) the inflation rate is 5% annually, and the corporate tax rate 25%.

9. EVN's financial projections (income statement, balance sheet, and cash flow statement) and ratio calculations are summarized in Tables A2.4 and A2.5. It is expected that EVN will meet all the financial covenants for FY2010.

**Table A2.4: Viet Nam Electricity Financial Projections, 2009–2015**  
(\$ billion)

Item	2009	2010	2011	Projected 2012	2013	2014	2015
<b>A. Income Statements</b>							
Net Sales	80,894	98,343	114,139	135,819	158,158	183,199	213,789
Cost of Sales	64,478	75,883	85,499	102,695	116,983	137,255	164,233
Selling & Administration Expenses	6,297	7,135	8,161	9,345	10,686	12,161	13,890
Net Other Operating Income	(5,187)	1,079	12	(392)	(356)	(894)	(1,426)
Finance Cost	4,361	6,009	8,804	10,670	12,505	13,942	16,078
Income Tax	143	2,599	2,922	3,179	4,407	4,737	4,540
Net Profit	429	7,796	8,766	9,538	13,221	14,211	13,621
<b>B. Balance Sheets</b>							
<b>Assets</b>							
Current Assets	61,527	63,443	65,250	68,231	69,522	69,229	70,244
Non-Current Assets	207,499	280,154	346,384	398,140	454,202	504,556	555,996
Total Assets	269,025	343,598	411,634	466,371	523,725	573,785	626,240
<b>Liabilities &amp; Equity</b>							
Current Liabilities	38,090	47,427	54,027	60,601	65,992	69,014	71,725
Non-Current Liabilities	124,212	170,875	213,682	244,746	278,815	307,519	336,495
Equity	106,723	125,296	143,925	161,024	178,917	197,252	218,020
Total Liabilities & Equity	269,025	343,598	411,634	466,371	523,725	573,785	626,240
<b>C. Cash Flow Statements</b>							
Cash Flows from Operating Activities	23,851	25,256	36,354	44,067	51,507	57,987	63,461
Cash Flows from Investing Activities	(36,102)	(91,658)	(90,602)	(82,028)	(93,058)	(94,044)	(101,988)
Cash Flows from Financing Activities	26,170	59,746	54,939	38,806	40,003	32,060	35,128
Net Increase in Cash	13,919	(6,656)	691	844	(1,548)	(3,997)	(3,399)
Cash at Beginning of Year	10,618	24,537	17,881	18,572	19,416	17,868	13,872
Cash at End of Year	24,537	17,881	18,572	19,416	17,868	13,872	10,472

( ) = negative.

Source: Viet Nam Electricity.

**Table A2.5: Financial Ratio Covenants**

Item	2009	2010	2011	2012	2013	2014	2015
Debt service coverage ratio	1.55	1.82	1.61	1.53	1.60	1.57	1.56
Self-financing ratio	19%	25%	26%	26%	31%	28%	33%
Debt–equity ratio	56:44	60:40	62:38	63:37	64:36	64:36	64:36

Source: Asian Development Bank.

## POWER SUBSECTOR ANALYSIS

### A. Institutional Overview

1. The Ministry of Industry and Trade (MOIT) has policy and supervisory responsibilities for energy, both as the line ministry and as the ministry with oversight responsibility for state-owned companies. MOIT is responsible for supervising implementation of government policy, and recommending and drafting major policy reforms for government adoption. MOIT has specific responsibility to implement the government's policy of full electrification by 2020 and promoting renewable energy generation.

2. Viet Nam Electricity (EVN), the main power utility of Viet Nam, is organized as a holding company, with a series of wholly owned subsidiaries. EVN owns the strategic power plants, holds majority shareholding stakes in partially privatized power plants, and invests as the sole investor or in partnership with other public and private investors in new power plants. Key subsidiaries include three regional power companies that are in charge of power transmission and distribution from 110 kilovolts (kV) and less in northern Viet Nam (Power Company 1 [PC1]), southern Viet Nam (Power Company 2 [PC2]), and central Viet Nam (Power Company 3 [PC3]); and power distribution companies responsible for power distribution in large cities such as Hanoi, Ho Chi Minh City, Hai Phong, Hai Dong, Da Nang, Khanh Hoa, and Dong Nai. The power companies each maintain their own financial accounts and have a high degree of managerial and financial autonomy. Other key entities under EVN include the Power Transmission Corporation responsible for high-voltage (500 kV and 220 kV) power transmission; four power engineering consulting companies; the National Load Dispatch Center; and subsidiaries engaged in non-core activities such as equipment manufacturing, telecommunications, real estate, and financial services.

3. Viet Nam's far-reaching power sector reform program was launched with passage of the forward-looking Electricity Law in late 2004 and establishment of the new Electricity Regulatory Authority of Viet Nam under the oversight of the minister of industry. The country's efforts to restructure the power industry and develop a competitive power market are a long-term proposition. The objectives of Viet Nam's power sector reform are to maximize efficiency through competition in the power industry and to expand mobilization of investment and managerial resources from outside the current state-operated system, in order to minimize costs and provide reliable, high-quality service to consumers. As described in the recently approved road map, the reform process is expected to span 20 years, and proceed through (i) a preparatory phase and initial "trial" market, followed by operation of a competitive market for supply from generators to a single buyer; (ii) a second phase introducing a wholesale competitive market for bulk supply to distribution companies and large users; and (iii) a final phase introducing retail competition.

4. In rural areas, local communities own and operate the low-voltage electricity distribution systems in most areas. The basic approach adopted for rural electrification in Viet Nam has been for EVN's power companies to develop the medium-voltage network, and for local communities to develop the low-voltage system (although EVN has undertaken this role for about one-fifth of Viet Nam's communes). Provincial people's committees have oversight for rural electrification in their provinces, and provide substantial financial support for the local share of investment. Until 2004, local power distribution was handled by informal commune electricity groups or other informal entities in about two-thirds of Viet Nam's electrified communes. According to government regulations, however, all of these entities are now required to convert to formal legal entities, such as cooperatives or joint-stock companies. As of the end of 2007, 39% of electrified communes were supplied by EVN's power distribution

subsidiaries, 54% of the communes by cooperatives, 4% of the communes by joint-stock companies, and only 3% by informal entities.

## B. Power Sector Performance

5. Performance of Viet Nam's power industry, managed primarily by EVN, has been quite good in recent years. The industry has kept pace during the last decade with extraordinary increases in demand, maintaining basic service for its customers most of the time. EVN has maintained strong financial viability, while keeping costs to consumers quite low by international standards. Dramatic increases in rural access and steady reductions in transmission and distribution losses are particularly notable achievements. The challenge for the future is to meet the rapidly expanding demands of the economy and population, with minimum disruption, hopefully with further improvements in service quality and without unreasonable increases in costs to consumers.

6. Electricity generation in Viet Nam grew at an annual compounded rate of 13.7% during 1995–2007, and since 2000 the annual growth rate has exceeded 15%. Electricity generation has grown threefold 2000 to 2008 to reach 67 terawatt-hours in 2004 compared with 23.7 terawatt hours in 1999. The forecasted gross domestic product (GDP) growth exceeding 7% for 2005–2010, coupled with the increasing share of industrial output in Viet Nam's GDP, will maintain the growth momentum in electricity demand as shown Table A3. The reserve margin becomes very low during the dry season and this becomes even worse in northern Viet Nam where most of the generation capacity is hydro.

**Table A3: Historic Demand and Generation Data, 2005–2009**

<b>Item</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Annual demand (gigawatt-hour)	53,400	59,800	67,100	75,400	84,600
Peak demand in dry season (MW)	9,018	10,157	11,235	12,782	14,286
Growth in annual demand (%)	15.2	11.9	12.3	12.3	12.3
Installed capacity (MW)	10,907	11,714	13,419	16,383	19,084
Dry season available capacity (MW)	9,018	10,243	11,288	13,346	17,173
Reserve margin in dry season (%)	4	1	0	4	20

MW = megawatt.

Source: Ministry of Industry and Trade.

7. Access to electricity in rural areas increased dramatically during 1996–2004, marking one of the most successful recent rural electrification programs in the world. The number of rural households with access to electricity increased from 50.7% in 1996 to 92% in 2007. Rural household access rates are expected to increase in the next few years, although achievement of access among the final 5% of rural households will not be easy. The success of Viet Nam's program lies especially with the commitment of the government to rural electrification, and the definition and systematic implementation of national plans as a matter of priority, as well as public investment and support to match community funds.

8. Transmission and distribution losses in EVN's system have fallen steadily over the last decade, to 12.2% in 2007. This is not unreasonable for a system such as Viet Nam's in its current stage of development, especially given the heavy role of low-voltage residential consumers, but further improvement is possible. In future, the Electricity Regulatory Authority of Viet Nam must monitor efficiency indicators carefully against various benchmarks. Management of consumer accounts receivable has been exceptionally effective for a developing country, with accounts receivable in 2007 equivalent to only about 17 days of sales. Nontechnical losses, including theft, are low compared with many countries. Widespread anecdotal evidence points to substantial improvements in the quality of electricity service over the last 10 years, with basic

service for most customers in urban or peri-urban areas becoming noticeably more reliable. However, systematic statistical monitoring of service interruptions and voltage drops, by service area and customer voltage, is lacking.

9. The tariff was D880 per kilowatt-hour (kWh) in 2004 (\$0.056/kWh). This is lower than the average retail price today in most countries. The financial position of EVN has remained sound with unit revenue remaining stable during the last few years through 2007, covering all of its direct and indirect costs, but this revenue will not be sufficient for the future. Viet Nam's power tariff is sophisticated in structure, with rates varying by voltage level and consumer type, and offering time-of-day rates for major consumers. Urban residential rates increase progressively with increasing consumption. Rural rates are cross-subsidized by other consumers. Both average urban residential rates and rural residential rates are modestly cross-subsidized by higher rates for industry and commerce.

## C. Main Power Sector Issues

### 1. Meeting Power Demand

10. The demand for electric power is the paramount challenge for Viet Nam's power industry. Key drivers of the country's economic growth, especially manufacturing and commercial and service industries, are highly dependent upon power supply. Reliable electricity service is essential for light industries to remain competitive with similar industries in neighboring countries. Electricity has also become an expected basic element in the livelihood of most people, and an essential part of increasing standards of living. The power shortages experienced in the dry seasons of 2005–2008 clearly reinforced a priority focus on meeting demand throughout Viet Nam's power industry, with highly visible national attention. The capacity shortfall was estimated at some 1,500–2,000 MW during peak load. The shortage was caused by the coincidence of severe drought conditions, reducing hydropower production, with an extremely thin reserve margin in the overall system due to an inability to develop new capacity over a short time to meet the higher than expected surges in power demand.

11. Viet Nam's overall strategy is to develop existing hydropower resources and the coal and gas plants, subject to the availability of domestic fuel resources, relatively quickly as both exploitable domestic coal supplies and offshore gas supplies have supply constraints. The availability of domestic coal for the power industry is capped by domestic resource limits, given current technology, and exports. Expanding the gas supply requires not only field and pipeline development, but also exploration and firming up of reserves.

12. **Coal-based power generation.** Assessment of the best balances between coal- and gas-fired power is a key long-term planning issue, which is highly sensitive to future relative fuel price and supply expectations. With the country's coal resources limited, the government's strategy is to strictly cap exports in favor of expanding domestic supply—essentially to postpone the expected eventual need for coal imports. Although high-quality anthracite obtains a premium price on the international market, domestic coal prices for power generation are maintained below international prices. At current domestic coal prices, power generation from domestic coal is significantly less expensive than combined-cycle, gas-based power generation at capacity factors exceeding 50%–60%. However, in economic terms, considered from the perspective of the country as a whole, the value of domestic coal used for power generation is higher than its current price, as it can be exported for more money, which would accrue to Viet Nam. However, development of large-scale power generation using Viet Nam's offshore natural gas resources requires aligning the interests of a series of institutional participants, and major upfront financing and long-term commitments. On the gas exploration and development side, for the longer term, Viet Nam must maintain an attractive framework for international companies to continue

exploration and firm up reserves, as much potential remains unexplored. Once the main options for generation from domestic coal and gas have been exploited, thermal power generation using imported coal is expected to be the most cost-effective option.

13. **Gas-based power generation.** PetroVietnam Gas Corporation, PetroVietnam's subsidiary charged with natural gas operations, is a central entity, holding the government's shares in field production facilities, retaining the sole rights in most cases to buy offshore gas and sell gas to end-users, and charged with gas transmission system development (although this may be in cooperation with international companies). Upstream gas exploration and development is undertaken in joint-venture or production-sharing arrangements between PetroVietnam Gas Corporation and international petroleum companies. On the power generation side, development of independent power producers (IPPs) with investors independent of EVN is essential for a large portion of the power generation capacity, due to EVN's limited financing capacity. Finally, the government (aside from its ownership position of PetroVietnam and EVN) must play key roles: sanctioning the specific development arrangements and providing some type of partial risk coverage for electricity sale arrangements to outside investors.

14. **Hydropower development.** With goals to provide almost 6,000 MW over the medium term, Viet Nam's program to develop its many medium-sized hydro sites will provide a core contribution to the overall power development program in each of the three geographic regions. Particular advantages include development of a source of domestic renewable energy quite separate from international energy price and security risks, and benefits from associated water control in many cases. Although economics vary by site, costs are generally quite competitive with the thermal power options in Viet Nam. Viet Nam has made substantial progress during the last 5 years in upgrading its reservoir resettlement and environmental assessment practices. Current policies provide a reasonably well-structured set of legal and regulatory requirements. Financial commitments for resettlement work in new projects are now substantial. The most difficult issues, including restoration of livelihoods for ethnic minorities that may be affected by reservoir development, are complex in every country, and require concerted efforts in consultation with local residents throughout implementation.

15. **Renewable energy development.** Viet Nam's renewable energy development program is growing, and can provide an increasing contribution in the future. Development has focused especially on off-grid power supply in isolated areas, but small hydro facilities, in particular, can also provide an important source of renewable energy to the grid. Wind power generation may also provide a small contribution. Viet Nam plans to develop nuclear energy capacity over the long term. Both MOIT and EVN have developed demand-side management and energy efficiency programs in recent years. Load management programs and energy efficiency promotion and investment programs are proven means to address capacity constraints that are far less expensive than new capacity. Such efforts can yield results relatively quickly in some cases, but do require sophisticated institutional development, which has proved challenging in most countries.

## 2. Financing the Investment

16. Annual power sector investment requirements to meet power demand during 2005–2010 are expected to be more than \$3 billion. The country seeks to mobilize investment through a variety of vehicles, from both domestic and foreign sources, to meet this challenge. The two basic categories are EVN's contribution to investment from its own resources and different types of borrowing, and independent investment, primarily by IPPs. Financing of new investment through the current EVN system, including subsidiaries, is essential for key parts of the construction effort, including the network, most of the hydropower program, and selected

elements in the thermal power program. EVN exhibited strong financial performance during 2002–2007, allowing a substantial self-financing contribution to the investment program.

17. With increased costs stemming in part from power shortages, and the sharp increases in investment requirements, self-financing ratios will plummet unless EVN's unit sales revenue increases substantially. The corporation is proceeding to borrow from a wide variety of sources, including by issuing bonds. However, EVN will reach borrowing limits very quickly, unless revenues are increased (or a major injection of equity is made, which is unlikely). Overextension of borrowing above internationally recognized ratios would be highly imprudent, as maintenance of EVN's creditworthiness is essential for any sustainable investment mobilization effort. Average retail power prices must be increased quickly to cover greater costs but also, especially, to expand revenues for financing the massive power sector expansion. Ultimately, consumers must contribute to the financing of the new capacity to meet their needs. Power prices in Viet Nam—including industrial tariffs, and especially in the residential sector—are relatively low by international standards.

18. Clearly, dramatic increases in power sector investment from outside EVN will be required to meet overall sector investment requirements. Viet Nam is pursuing a wide range of IPP arrangements in its efforts to meet the huge and rapid increases in power demand. IPP arrangements for new power plants include (i) build-operate-transfer or build-operate-own ventures wholly owned by other public-owned Vietnamese entities; (ii) joint-venture build-operate-transfer or build-operate-own arrangements, involving EVN investment with other participants (local public or foreign); and (iii) build-operate-transfer arrangements wholly owned by foreign parties, either public or private. In addition, new joint-stock company IPPs are being created from EVN's partial divestiture of existing power plants. In the case of Viet Nam, few public entities have the resources and interest to make major power generation investments, which are, for the most part, limited to the state-owned fuel supply companies or large construction companies.

## DEVELOPMENT PARTNER COORDINATION

1. Six development partners are particularly active in supporting the power sector in Viet Nam: The Agence Française de Développement (AFD); the Asian Development Bank (ADB), the Japan International Cooperation Agency (JICA); the Kreditanstalt für Wiederaufbau (KfW); the Swedish International Cooperation Agency (SIDA); and the World Bank group (WB);
2. Agence Française de Développement (AFD). The AFD has currently one on-going project loan in the power sector: co-financier with ADB of the loan 2128-VIE Northern Power Transmission Sector Project, and approved \$100 million non – sovereign loan for the 520 MW Hoi Quang hydropower project in 2009. In 2000 and 2001 the AFD has approved two projects loans for rural electrification in Viet Nam. In addition the AFD has several technical assistances, one financing an adviser to the Electricity Regulatory Agency of Viet Nam (ERAV); another one on the development of an energy efficiency law for the Ministry of Industry and Trade (MOIT).
3. Japan International Cooperation Agency (JICA). Since 1993, JICA has committed approximately \$2.4 billion to the power sector, mainly for power generation, and plans to continue to finance future power plants. JICA is also supporting MOIT in preparing Master Plan for Energy Conservation and Effective Use as well as the Waste Heat Recovery But Son Cement Plant in Ha Nam Province.
4. Swedish International Cooperation Agency (SIDA). Since 1995, SIDA has committed about SKr 400 million mainly for the construction of hydropower plant and development of distribution system in Central area and also upgrading some rural grids. Sida has also financed the recently equitized Vinh Son/Song Hinh hydropower cascade.
5. The World Bank (WB). Since 1995, the WB has committed over than \$1.5 billion in the power sector mainly to expand the transmission and distribution system, rural electrification program, power sector reform, energy efficiency, and recently to renewable energy development. The WB recently financed \$330 million to the 260MW Trung Son hydropower project. The WB is also preparing for Development Policy Loan (\$450 – 600 million) to EVN focusing on general market and power sector reform.
6. The Kreditanstalt für Wiederaufbau (KfW) is approving a €120 million loan in 2009 for the rehabilitation and the upgrade of the rural distribution grids that EVN took over from 5,000 communes in 2008 and 2009. This project will help reducing the technical and commercial losses of these rural grids which currently are estimated to be of 25 to 30%.
7. The United Nation Development Project (UNDP) is promoting the "Asia Least-Cost Greenhouse Gas Abatement Strategy Project (ALGAS)". In addition in Viet Nam it is formulating a climate change policy for the implementation of the United Nation Fund for Climate Change (UNFCCC) and financing with the WB the Reduction of the Electric consumption of the Ha Tien Cement Factory in Viet Nam.
8. A donor coordination matrix is provided in Table A4.1 and a list of the External Assistance to the Power Sector is provided in Table A4.2.

**Table A4.1: Donor Coordination Matrix**

Core Area	MOIT Action	ADB support	Support from other partners
Generation	Prepare the 7 <sup>th</sup> power master plan		World Bank is supporting the development of the 7 <sup>th</sup> master plan. JBIC financed the development of the 6 <sup>th</sup> master plan
	Attract private sector investment	Phu My 2.2 ADB provided private sector loan and political risk guarantee. ADB is also contemplating new private sector operations such as Nghi Son 2; O Mon 3 and 4 gas fired power plants	Phu My 2.2. JBIC and World Bank provided loans and guarantees. IFC is assisting the MOIT in developing standard bidding documents for BOT operations. World Banks is financing several technical assistance for developing BOT operations in Viet Nam
	Attract public sector loans	Mong Duong 1 thermal power plant – 1000MW Song Bung 4 hydropower plant-154 MW	AFD has approved a € 100 million on a non sovereign basis for the construction of the 520MW Hoi Quang Hydropower plant in Son La Province.
Transmission and Distribution	Prepare the 7 <sup>th</sup> power master plan	ADB by the past was supporting the development of transmission and distribution systems in South and Central Regions. ADB has 2 on-going loans that aim to develop and reinforce the power transmission in the Northern Region of Viet Nam.	Transmission, Distribution and Disaster Reconstruction provided by World Bank to implement reform thru development of EVN's transmission function, unbundling it from generation and ensuring its efficient development. AFD co-financed with ADB to Northern power transmission project.
Renewable Energy	Prepare Master Plan for Renewable Energy Development, and National Program on Renewable Energy Development	Loan 2517-VIE: Renewable Energy Development and Network Expansion and Rehabilitation for Remote Communes.  Technical assistant for Capacity Building of Renewable Energy Development.	World Bank is providing loan and technical assistant to support Renewable Energy Investments, Development of regulatory infrastructure related to renewable energy development. GTZ is assisting MOIT in Support Mechanism for Wind Power Development in Viet Nam
Energy Efficiency	Prepare Master Plan for Energy Conservation and Effective Use	ADB has a TA for the Energy Efficiency in the Industrial Sector in Viet Nam.	JICA is supporting MOIT in development of Law on Energy Conservation and Effective Energy Use. KfW is preparing to provide Euro 120 million for energy efficiency and renewable energy development.
Power Sector Reform	Competitive Generation Market and Power Sector Restructuring plan	ADB has implemented an AOTA for the development of the power market and has an on-going AOTA for the computation of the transmission charges in a competitive power market	WB's Development Policy Program including 3 loans with total of \$450-600 million to EVN in development of generation market and power sector reform.
GMS Interconnections	MOIT issued authorization to EVN and Song Da Corporation Viet Nam to invest in hydropower in Cambodia and Lao PDR	ADB is financing the REAT 6440 which aims to study the power interconnection between Lao PDR, Cambodia and Viet Nam. Under the RETA 6481, ADB is carrying out the feasibility study of the power interconnection Ban Sok (Lao PDR) to Pleiku (Viet Nam)	WB is carrying out the feasibility study for the power interconnection between P.R. China to Viet Nam

ADB = Asian Development Bank, AFD = Agence Francaise de Development, AOTA = Advisory Technical Assistance, BOT = Built-Operate-Transfer, EVN= Viet Nam Electricity, GMS = Greater Mekong Subregion, GTZ = Deutsche Gesellschaft für Technische Zusammenarbeit GmbH, IFC = International Finance Corporation, JICA = Japan International Cooperation Agency, KfW = German Development Corporation through KfW, MOIT = Ministry of Industry and Trade, RETA= Regional Technical Assistance, SIDA=Swedish International Development Agency, WB = World Bank.

**Table A4.2: Major External Assistance to the Power Sector in Viet Nam**  
(\$million)

<b>Project Loans</b>	<b>Funding Source</b>	<b>Amount (million)</b>	<b>Year</b>
Northern Power Transmission (Sector) Project	ADB	\$120.0	2004
Northern Power Transmission Expansion Sector Project	ADB	\$360.0	2005
Mong Dung 1 Thermal Power Project	ADB	\$28.0	2008
Song Bung 4 Hydropower Project	ADB	\$198.0	2008
Renewable Energy Development and Rehabilitation for Remote Communes Sector Project	ADB	\$151.0	2008
Rural Electrification Project	AFD	€19.0	2000
Rural Electrification Project in South	AFD	\$23.0	2001
Northern Power Transmission Project	AFD	€40.0	2004
O Mon Thermal Power Plant and Mekong Delta Transmission Network Project	JBIC	¥43,819.0	2000–2006
Dai Ninh Hydropower Project	JBIC	¥33,172.0	1998–2003
Phi My–Ho Chi Minh City 500 kV Transmission Line Project	JBIC	¥13,127.0	2000
Ninh Binh II Thermal Power Plant	JBIC	¥33,864.0	2004–2005
Nghi Son Thermal Power Plant	JBIC	¥20,943.0	2006
Power Sector Loan	JBIC	¥3,190.0	2003
O Mon Thermal Power Plant Unit 2 Construction Project	JBIC	¥27,547.0	2003
Dai Ninh Hydropower Project (III)	JBIC	¥19,142.0	2004
Thad Mo Hydropower Station Extension Project	JBIC	¥5,972.0	2003
Small-Scale Pro-poor Infrastructure Development Project	JBIC	\$44.0	1997–2006
Rural Energy Project	World Bank	\$150.0	2000
System Energy, Equalization and Renewable Energy Project	World Bank	\$225.0	2002
Second Rural Energy Project	World Bank	\$220.0	2004
Second Transmission and Distribution	World Bank	\$220.0	2005
Construction of Song Hahn Multipurpose Hydropower Plant	Sida	SKr213.0	1995
Ha Tin 500 kV Substation	Sida	SKr55.0	1998
Power Distribution Project in Central Area	Sida	SKr60.0	1999
Upgrading Rural Substations	Sida	SKr60.0	2000

ADB = Asian Development Bank, AFD = Agence Française de Développement, kV = kilovolt, JBIC = Japan Bank for International Cooperation, Sida = Swedish International Development Cooperation Agency.

Sources: ADB, AFD, JBIC, Sida, and World Bank

## SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

Country and Project Title: Viet Nam Guarantee to Commercial Banks for a Loan in Connection with the Investment Support Program for Viet Nam Electricity
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Lending/Financing Modality:	Guarantee	Department/Division:	Southeast Asia Regional Department/ Energy and Water Division
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### I. POVERTY ANALYSIS AND STRATEGY II.

#### A. Link to the National Poverty Reduction Strategy and Country Partnership Strategy

Viet Nam has been one of the fastest growing economies in the Asia for the last two decades, with real gross domestic product (GDP) growth averaging 8.0% per annum during 2003–2007. Per capita GDP increased to \$817 in 2007 compared with \$441 in 2002. Although the country has suffered from high inflation due to high energy and food prices and supply bottlenecks, the long-term growth prospects remain positive. Viet Nam has achieved remarkable progress in socioeconomic development since 1993. The reduction in the national poverty rate from 58% in 1993 to less than 20% by 2007 is unprecedented. However, poverty remains at more than 50% in northern mountain provinces inhabited by ethnic minority communities. The lack of infrastructure facilities and nonfarm income-generation activities have contributed to the persistent poverty in these isolated areas. The country business operation plan<sup>a</sup> of the Asian Development Bank (ADB) for Viet Nam focuses on supporting pro-poor economic growth, social equity and balanced development, and sustainable environment management. One of the key challenges for poverty reduction in Viet Nam's Socio-Economic Development Plan (SEDP)<sup>b</sup> is to provide the basic services and infrastructure needed to ensure the access to markets needed to attract private investment and create jobs. ADB's country strategy to help the government reduce poverty by implementing SEDP targets is particularly focused on promoting pro-poor economic growth. Provision of basic infrastructure is one of the prerequisites.

The potential for electricity to facilitate communication, income generation, and economic growth is part of the government's poverty reduction strategy. Currently, 91.5% of households in Viet Nam are connected to the national power grid system, and the government plans to extend the system to connect about 96% of villages. Those remaining unconnected are communes in remote mountain, central, and southern provinces, often inhabited by ethnic minorities with 40%–70% of the population living below the national poverty line. The project contributes to the government's objective of connecting electricity to 100% of households by 2012.

#### B. Poverty Analysis

**Targeting Classification:** General intervention

##### 1. Key Issues

Viet Nam has made significant progress in providing electricity services to the population. This is a key objective in the government's strategy to reduce poverty and vulnerability. The share of households with access to electricity increased from 49% in 1992 to 86% in 2002 and nearly 94% in 2008. The consumption of electricity increased during 1995–2008 from 156 kilowatt-hours (kWh) per household per month to about 800 kWh. However, due to Viet Nam's rapid economic growth during the last two decades since 1988 with a 16% power demand growth all over the country, Viet Nam Electricity (EVN) is facing shortage of power generation and has had to introduce load shedding in both rural and urban areas. For example, in 2008, load shedding was introduced in large cities such as Hanoi and Ho Chi Minh City, and the residential sector and small consumers were the first to experience interrupted supply as the government decided to give priority to the industry sector. Such policy had negative impacts on the poorest households who were running small businesses.

Before March 2009, the rural grids were operated by rural distribution cooperatives with limited resources and low technical skills, leading to high technical and commercial losses, resulting in high tariffs for consumers. Since March 2009, the government decided that all these inefficient grids should be operated and maintained by EVN. This includes power grids of about 5,000 communes and concerns about 7 million consumers. To decrease technical and commercial losses in such grids, as well as to increase their reliability, EVN needs to make important investment in the medium- and low-voltage grids. For the economic growth of Viet Nam and the development of the industry sector, and due to the increased power demand from the residential sector, EVN needs to invest in new power generation. Due to the large investment required, the government decided that, in addition to the investment made by EVN, it would call for private investors to build additional generation capacity. Due to the development of this additional generation, EVN also needs to reinforce its transmission and distribution system in order to supply power to the end user consumer with an acceptable degree of quality and reliability as well as at a reasonable price, i.e., by limiting technical losses to an acceptable level. The proposed project will thus address these issues by financing the reinforcement of the 500 kilovolt (kV), 220 kV, and 110 kV transmission systems and the rehabilitation of medium- and low-voltage grids in urban and rural areas. To summarize, a reliable source and good quality electricity supply is very important for industrial growth, commerce, the service sector, and poverty reduction. Employment generated through industry, commerce, and services will offer a significant opportunity to many households from rural areas.

## 2. Design Features

The project will not have direct poverty reduction impact. Given the nature of the project there is no scope for pro-poor design.

### III. SOCIAL ANALYSIS AND STRATEGY

#### A. Findings of Social Analysis

The social assessment in the project areas show that electricity problems, shortage of electricity, unreliable power voltage, and power cuts have implications for industry, business, home industry, health, and education facilities. The following are the key findings of the social analysis.

Before 2005, all households in the six subproject areas had access to electricity. The management of electricity and supply was under the control of communes and wards. This led to different pricing in different areas. Before that time, the electricity cooperatives were responsible for electricity at the commune level and sold electricity at a high price (D700–D1,000 per kWh for households, and D1,500–D2,000 for small private enterprises), but the power supply was unreliable and of low quality. The electricity price in urban areas was cheaper than in rural areas. This was due to (i) a high level of electric power leakage in rural areas, and to compensate for this leak, rural households often had to bear the increased electricity price; and (ii) poor management and corruption at commune and ward level. Nowadays, households in the subproject areas have access to electricity at the government price. However, the degraded power transmission networks resulted in poor electricity quality and unstable supply. This has a significant impact on households and small-scale businesses because the required amount of electricity is not always provided. The poor quality of supply that leads to voltage drop or sometimes over-voltage, including power cuts, are not favorable to the development of small business especially in rural areas. High losses are also contributing to higher cost of electricity, despite the existing lifeline tariff that the government introduced in favor of smaller consumers.

Viet Nam is shifting away from a centrally planned economy to a more market-oriented economy. Industries, services, and businesses are booming. In the subproject areas, there are many small businesses such as restaurants, cafes, karaoke bars, and food processing plants, and these business activities are a major source of income for local entrepreneurs. However, these businesses require large amounts of reliable and stable power. Power cuts and fluctuating voltage has significant negative impact on local businesses. For example, in Nam Sach district, a food processing plant (soy curd) can lose D5 million a night due to power cuts. Some entrepreneurs use their own generators for their businesses but most of them does not have back up generators and are suffering of production losses. Farmers use electric water pumps for irrigation, but due to unstable and insufficient power supply they sometimes use diesel-powered water pumps which cost three times more to run. Big enterprises, such as in the shrimp industry, can lose several thousand dollars a day due to power cuts. Workers can also lose income due to power cuts. In the subproject areas there are 21 industrial zones in food processing, shipping, coal exploitation, garment industries, etc. Although these industrial sites have private power lines, due to overloading and old cables there are power cuts 5–7 days a month, and this affects the operation of the industries. Some of these big industries have to buy high-volume power generators, and in some cases garment factories have to replace automatic machines with manual ones.

Electrical power supply is usually cut off during the hot periods in summer. In addition, electricity quality is not stable and reliable. Due to inadequate electric supply, domestic equipment such as TVs, cooking stoves, and electric lamps can not be operated. Because of power cuts and insufficient power, clean water factories in some communes and wards in Hai Duong province are not working; as a result, 80% of households do not have clean water. Women bear the burden of electricity problems; instead of using electricity for cooking, they have to use firewood, straw, charcoal, or dried leaves. The commune leaders advised that during power cuts around 70%–80% of the population have no fresh water, and water must be carried by shoulder poles from public wells—a burden which is generally taken up by women.

In recent years, with the economic development the health facilities have been equipped with modern amenities. The insufficient electrical power supply causes difficulties in medical practices such as medical checks, surgery, and preservation of medicine, etc. In some project areas, such as Tien Lang, Hai Phong, due to power cuts for 7–10 days in a month, diesel generators were bought, which increases the cost of providing medical services. Despite government attempts to invest more on human resources, medications, and facilities in hospitals, medical centers, and clinics in rural areas, rural people still have to go to provincial hospitals because of poor power supply in the rural health centers. This results in more pressure on hospitals and health facilities at the provincial level. The power cuts in schools and colleges disturb laboratory work for the students, and the teaching process, and affect the quality of learning. At an individual level, low quality of power supply introduces some extra costs for middle-income consumers as the life span of electric appliances is reduced. The investments are for construction of new 220 kV and 110 kV substations and upgrading and rehabilitating the rural grid network and will facilitate adequate and reliable electricity supply for individual customers, industries, businesses, public facilities, etc. Stable power supply will play a very important role in small businesses. The supply of adequate and reliable electricity will increase business opportunities for manufacturing and hotels, and will provide employment opportunities. The negative impact of the project relates to resettlement activities such as land acquisition. The resettlement plan includes mitigation measures for the affected people.

**B. Consultation and Participation**

1. Provide a summary of the consultation and participation process during the project preparation. Stakeholders were consulted in the subproject locations during the preparation of the resettlement plan. In addition to sample survey, interviews were held with individuals and focus group meetings with key stakeholders (men and women) from different occupational groups such as small business owners, education and health care providers, local administration, and regional development authorities.

2. What level of consultation and participation (C&P) is envisaged during the project implementation and monitoring?

Information sharing     Consultation     Collaborative decision making     Empowerment

3. Was a C&P plan prepared?  Yes     No

**C. Gender and Development****1. Key Issues**

The lack of reliable electricity affects women's work in industry, food processing plants, and cash-crop farming. Power cuts and fluctuation of voltage affects use of household equipment and increases the drudgery of women's work. Power cuts and voltage shortages can affect work for women entrepreneurs in terms of profit and their daily schedule. In the subproject areas women are mainly involved in agricultural production and small-scale trade. Women are also involved in education, public services, and health care services, and many younger women are working in industrial parks located in the subproject areas. Women are also engaged in small and medium-sized private enterprises, and restaurants located in the communes. Most young women in Ninh Thuy commune (Ninh Thuy 110 kV substation and transmission line subproject) are involved in sea fish and shrimp processing factories. The older women take part in salt making and managing small businesses. These food processing industries and businesses depend on electricity. The industrial parks which employ many women workers from local communities are heavily reliant on reliable power supply. Sea fish and shrimp processing plants mostly engage women workers. Electricity power cuts have a direct impact on women's income because they are not paid a fixed rate but their pay is based on production. For plantations of vegetables and flowers women use electric water pumps due to the low cost of electricity. During power cuts water has to be carried by shoulder poles from wells—a burden which is mainly taken up by women.

Electric rice cookers are used by 80%–90% of farmer households in five of six subproject areas. In the Duc Trong 220 kV substation area, about 57.5% of ethnic minority households (Phu Hoi commune) have electric rice cookers. When there are power cuts, they have to use firewood, straw, charcoal, or dried leaves for cooking, which is time-consuming. The time spent in cooking also impacts on women's child care responsibilities.

Reliable electricity would increase income and productivity of women workers in the industry and food processing plants. Access to quality electricity would allow women to investment in and use household appliances, and this would reduce their work. The improvement of voltage shortage and less frequent power cuts would increase business turnover for women entrepreneurs.

**2. Key Actions.** Measures included in the design to promote gender equality and women's empowerment—access to and use of relevant services, resources, assets, or opportunities and participation in decision-making process:

Gender plan     Other actions/measures     No action/measure

The measures are included in the resettlement plan to minimize negative impact of the resettlement.

<b>III. SOCIAL SAFEGUARD ISSUES AND OTHER SOCIAL RISKS</b>			
<b>Issue</b>	<b>Significant/Limited/ No Impact</b>	<b>Strategy to Address Issue</b>	<b>Plan or Other Measures Included in Design</b>
<b>Involuntary Resettlement</b>	The project will consists of 86 subprojects, of which 41 subprojects require land acquisition.	The project will require 40 subprojects to prepare short resettlement plans	<input type="checkbox"/> Full Plan <input checked="" type="checkbox"/> Short Plan <input checked="" type="checkbox"/> Resettlement Framework <input type="checkbox"/> No Action
<b>Indigenous Peoples</b>	Ethnic minority Kin people in the project area are integrated into Vietnamese society. Of the 41 subprojects, three future subprojects are expected to acquire land owned by ethnic minorities; no households will be relocated.	Ethnic minority specific action is included in the resettlement framework.	<input type="checkbox"/> Plan <input checked="" type="checkbox"/> Other Action: Ethnic minority specific action included in the resettlement framework <input type="checkbox"/> Indigenous Peoples Framework <input type="checkbox"/> No Action
<b>Labor</b> <input type="checkbox"/> Employment opportunities <input type="checkbox"/> Labor retrenchment <input checked="" type="checkbox"/> Core labor standards	No impact	Inclusion in the construction contractors' contract provisions of basic facilities, and ban on the use of child and trafficked labor.	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input checked="" type="checkbox"/> No Action
<b>Affordability</b>			<input type="checkbox"/> Action <input checked="" type="checkbox"/> No Action
<b>Other Risks and/or Vulnerabilities</b> <input type="checkbox"/> HIV/AIDS <input type="checkbox"/> Human trafficking <input type="checkbox"/> Others(conflict, political instability, etc), please specify	There is potential risk for human trafficking and HIV/AIDS during construction.	The construction contractors' contract will include awareness campaign on prevention of human trafficking and HIV/AIDS.	<input type="checkbox"/> Plan <input type="checkbox"/> Other Action <input checked="" type="checkbox"/> No Action
<b>IV. MONITORING AND EVALUATION</b>			
<p>Are social indicators included in the design and monitoring framework to facilitate monitoring of social development activities and/or social impacts during project implementation? Yes No <input checked="" type="checkbox"/></p> <p>Regularly, monitoring and evaluation of the resettlement plan implementation will be carried out by an independent monitoring agency, hired by Viet Nam Electricity.</p>			

<sup>a</sup> ADB. 2008. *Country Operation Business Plan: Viet Nam, 2009–2011*. Manila.

<sup>b</sup> Government of Viet Nam. 2004. *Socio-Economic Development Plan, 2009–2010*. Hanoi.

## SUMMARY RESETTLEMENT FRAMEWORK

1. **Project background.** The project consists of 86 subprojects located in 30 different provinces. These subprojects can be categorized into seven different technical groups: (i) new air-insulated substations, (ii) extension of existing air-insulated substations, (iii) new gas-insulated substations (GIS), (iv) extension of existing GIS, (v) new transmission overhead lines, (vi) new underground cables, and (vii) rehabilitation of rural and urban medium- and low-voltage grids. The subprojects will be implemented by 11 subsidiaries of Viet Nam Electricity (EVN).

2. The resettlement plans will only apply for projects categorized in groups (i), (iii), and (v). Projects from groups (ii), (iv), (vi), and (vii) will not imply land acquisition so no resettlement is anticipated. Table A6.2 presents the results of the preliminary assessment that has been carried out and provides the involuntary resettlement categorization and procedure requirements for each of the proposed subprojects.

3. There are 41 subprojects that involve land acquisition and resettlement. Due diligence was conducted on seven subprojects where land acquisition has already been completed or is ongoing. For the other 34 subprojects that imply resettlement, short resettlement plans will have to be prepared to address land acquisition and resettlement issues that will only be determined after the final design and detailed measurement survey has been carried out. Therefore, a resettlement framework has been prepared to provide guidance during their preparation and implementation. A full resettlement framework is provided in Supplementary Appendix A.

4. **Project resettlement and ethnic minorities principles.** The payment for land and non-land assets will follow the principle of replacement cost. Assistance to severely affected and vulnerable households will be provided in cash or in kind. For households who experienced a decline in income based on due diligence findings or whose income source may be affected or will be at risk once the land is acquired, suitable livelihood development programs will be designed and implemented in consultation with households during implementation. Ethnic minority Kin people living in the project area are integrated into Vietnamese society. Of the 41 subprojects, three future subprojects are expected to acquire land owned by ethnic minorities; no households will be relocated. Resettlement plans affecting ethnic minority people shall include ethnic minority specific actions.

5. The resettlement framework will include the following gender-related specific actions: (i) a separate consultation meeting will be held to disclose the resettlement plan, (ii) replacement land will be registered in the names of both husband and wife in cases where land acquisition has taken place, (iii) compensation money will be paid to both husband and wife, and (iv) women will be consulted in planning and training for income restoration program.

6. **Consultation, disclosure, and grievance.** Consultations with the affected households will be carried out during the preparation of the resettlement plan. These activities will continue during implementation of the short resettlement plans for category B subprojects. Key information of resettlement plans will have to be disclosed to the affected households prior to appraisal of the concerned subprojects. A grievance redress mechanism is to be established and will be handled through mediation aimed at achieving consensus. Any complaint will pass through three stages before it can be elevated to a court of law as a last resort.

7. **Implementation arrangements.** The executing agency is EVN. The implementing agencies for the project are 11 participating subsidiaries of EVN. The overall coordination and administration of the project, including all those connected to the land acquisition and resettlement, is under the responsibility of the subsidiaries or their head office (for the National Power Transmission Corporation [NPT]). Each power company or office has its own

environment and social unit. As mandated by Decree 84/2007/CP on the land acquisition for national security and public interests, development purposes, land acquisition will be carried out by the district resettlement committee, chaired by the chair or vice chair of the district people's committee. Therefore, the NPT and power companies will have to work closely with the district resettlement committees.

**8. Monitoring.** The NPT and the power companies will serve as the project's internal monitoring body for their respective subprojects. The result of internal monitoring will be included as a part of monthly progress reports that the power companies and NPT will have to submit to the Asian Development Bank (ADB) through the EVN steering committee. In addition, quarterly independent monitoring reports on the implementation of the resettlement plans will have to be submitted to ADB, starting from the commencement of resettlement plan preparation, which coincides with the conduct of the detailed measurement survey and other resettlement activities. Social monitoring reports will be made available to the affected households and will be submitted to ADB for posting on ADB's website. EVN will recruit an external monitor agency to carry out the monitoring and evaluation tasks.

**9. Resettlement plan budget.** The budget for all packages cover compensation costs, allowances, relocation and rehabilitation measures, administration costs, and contingency. Independent appraisal agencies will be engaged by each of the power companies and NPT in order to assess the current market rates of the land and non-land assets. The power companies and NPT will ensure the timely provision of counterpart funds for covering any unforeseen obligations in excess of the resettlement budget estimates in order to satisfy resettlement requirements and objectives.

**10. Implementation schedule.** All resettlement activities will be coordinated with the civil works schedule. Land acquisition and relocation of affected households cannot commence unless the updated resettlement plan has been reviewed and approved by ADB. EVN will not allow construction activities in specific sites until all resettlement activities have been satisfactorily completed, agreed rehabilitation assistance is in place, and the specific sites are free of all encumbrances.

**Table A6.1: Indicative Schedule of Resettlement Activities**

Activities	Schedule
RP Preparation	January 2010–December 2010
ADB approval of draft RP	September 2010–January 2011
RP updating	April–May 2010
Detailed measurement survey, replacement cost survey	April–May 2010
Consultation	April–Dec 2010
Finalization of relocation strategy	May–June 2010
Design of income restoration program/strategy	May–June 2010
Disclosure of draft updated RP to APs	June 2010
Submission and ADB approval of updated RP	July 2010
Implementation of the approved updated RP	July 2010–December 2010
Disbursement of compensation to APs	July–Sep 2010
Relocation of affected households	Aug–Dec 2010
Implementation of income restoration program/strategy	Aug–Dec 2010
Internal monitoring (Submission of monthly progress reports)	April 2010–December 2011
External monitoring (intermittent)	April 2010–December 2011
Civil works construction	April 2010–onwards

ADB = Asian Development Bank, AP = affected people, RP = resettlement plan.  
Source: Electricity of Viet Nam.

**Table A6.2: Project's Involuntary Resettlement Categorization and Procedure Requirements**

No	Power company name of projects	Land acquisition		Category	LAA (m <sup>2</sup> )	Approx AH	Approx SAH	Resettlement plan preparation			EMR
		NNLA	TBA					NR	HBP	TBPI	
<b>A.</b>	<b>NPT</b>	2	13	13B	529,284	831	147	2		13	13
1	Cau Bong 500 kV SS		x	B	209,014	36	36			x	x
2	Duc Trong 220 kV SS and branch			B	24,711	148	17			x	x
3	Uyen Hung –Song May 220 kV line		x	B	14,732	100	15			x	x
4	Trang Bang – Tay Ninh line		x	B	14,493	115	25			x	x
5	Tay Ninh 220 kV substation		x	B	41,750	25	7			x	x
6	Posco steel substation(Phú Mỹ 2)		x	B	9,000	21				x	x
7	Duc Hoa substation		x	B	27,904	8				x	x
8	Cu Chi substation		x	B	34,796	13	5			x	x
9	Phan Thiet SS (second transformer)	x		C				x			
10	Tra Vinh power plant – Tra Vinh s/s T/L		x	B	51,221	96				x	x
11	Thanh My S/S	x		C				x			
12	Thuong Tin – Kim Dong line		x	B	11,470	19				x	x
13	Kim Dong 220 kV S/s		x	B	30,238	130	25			x	x
14	Son Tay 220 kV S/s		x	B	34,955	115	15			x	x
15	Bao Thang 220 kV S/s		x	B	25,000	5	2			x	x
<b>B.</b>	<b>PC1</b>	5	7	7B	30,765	180	38	5	1	7	7
1	Construction of 110 kV T/L and substation of Hau Loc – Thanh Hoa		x	B	3,900	13	5			x	x
2	Construction of 110 kV T/L and substation of Duc Thang, Bac Giang		x	B	5,928	12	4			x	x
3	Construction of 110 kV T/L and substation of Hung Hoa (Vinh 2)		x	B	4,148	17	7			x	x
4	Construction of Bach Hac 110 kV substation and branch		x	B	4,040	13	5			x	x
5	Construction of 110 kV T/L Quang Chau – Yen Phong		x	B	5,200	100				x	x
6	Construction of 110 kV Trang Bach SS and T/L		x	B	2,968	8				x	x
7	Construction of Dai Tu 110 kV substation and branch –Thai Nguyen		x	B	4,581	17	17		x		
8	Rehabilitation of Bac Ninh rural electricity grid	x		C		0		x			
9	Rehabilitation of Hung Yen rural electricity grid	x		C		0		x			
10	Rehabilitation of Hanam rural electricity grid	x		C		0		x			
11	Rehabilitation of Nam Dinh rural electricity grid	x		C		0		x			

No	Power company name of projects	Land acquisition		Category	LAA (m <sup>2</sup> )	Approx AH	Approx SAH	Resettlement plan preparation			EMR
		NNLA	TBA					NR	HBP	TBPI	
12	Rehabilitation of Thai Binh rural electricity grid	x		C		0		x			
<b>C.</b>	<b>Ha Noi PC</b>	14		0B	0			14			
1	Rehabilitation and upgrading of Tran 110 kV Hung Dao substation	x		C		0		x			
2	Rehabilitation and upgrading of 110 kV Phuong Liet – E13 substation	x		C		0		x			
3	Rehabilitate and upgrade 110 kV Nghia Do (E9) substation	x		C		0		x			
4	Rehabilitate and upgrade AIS from 110 kV Dong Anh (E1) to 110 kV Gia Lam (E2) substation	x		C		0		x			
5	Increase productivity of 110 kV E1.28 – Phung Xa substation	x		C		0		x			
6	Increasing productivity of 110 kV T1–transformer Van Dinh substation	x		C		0		x			
7	Installation of T2 transformer for 110 kV Phuc Tho substation	x		C		0		x			
8	Increasing productivity T1 Transformer of 110 kV Tia substation	x		C		0		x			
9	Rehabilitation of the Ha Dong city electricity network	x		C		0		x			
10	Rehabilitation of the Son Tay city electricity network	x		C		0		x			
11	Rehabilitation of Old Hanoi Rural Electricity Grid	x		C		0		x			
12	Rehabilitation of West Hanoi Rural Electricity Grid (stage 1)	x		C		0		x			
13	Rehabilitation of West Hanoi Rural Electricity Grid (stage 2)	x		C		0		x			
14	Rehabilitation of West Hanoi Rural Electricity Grid (stage 3)	x		C		0		x			
<b>D.</b>	<b>Hai Duong PC</b>	4	4	4B	11,031	813	0	4	4	3	3
1	110 kV Line from Haiduong to Lai Khe		x	B	8,400	383			x		
2	110 kV Line from Haiduong 1 220 kV Sub. to 110 kV Dai An Sub.		x	B						x	x
3	110 kV Line from Haiduong 220 kV Sub. to 110 kV Phuc Dien Sub.		x	B						x	x
4	Upgrading rural LV grid in Ninh Giang District		x	B	2,631	430				x	x
5	Upgrading rural LV grid in Tu Ky District	x		C				x			

No	Power company name of projects	Land acquisition		Category	LAA (m <sup>2</sup> )	Approx AH	Approx SAH	Resettlement plan preparation			EMR
		NNLA	TBA					NR	HBP	TBPI	
6	Upgrading rural LV grid in Thanh Ha districts and Hai Duong city	x		C				x			
7	Upgrading rural LV grid in Gia Loc districts	x		C				x			
8	Upgrading rural LV grid in Chi Linh districts	x		C				x			
<b>E.</b>	<b>Hai Phong PC</b>	5	10	10B	56,251	547	12	5		8	9
1	110 kV transmission line of Le Thien S/S		x	B	5,198	100	none			x	x
2	110 kV Le Thien Substation		x	B	4,413	20	4			x	x
3	110 kV Luu Kiem Transmission line – tee off		x	B	2,067	98				x	x
4	110 kV Luu Kiem Substation		x	B	4,440	22	5			x	x
5	110 kV Transmission line of Hai Phong Thermal Power Plant to Ben Rung and North Cam river		x	B	7,150	124				x	x
6	110 kV North Cam river Substation		x	B	9,800	24				x	x
7	110 kV transmission line and substation of new urban (Ximang) area	x		C	5,140	0	0	x			
8	Rehabilitating and extending the 110/22 kV Lach Tray Substation	x		C		0		x			
9	110 kV Minh Duc Transmission line and Substation		x	B	300	2				x	x
10	Upgrading 22 kV Lach Tray outgoing feeders	x		C				x			
11	Upgrading 22 kV Cua Cam outgoing feeders	x		C				x			
12	Upgrading 110 kV Cua Cam Substation	x		C				x			
13	110 kV Cat Ba Substation		x	B	5,007	5	1		x(Gov form)		x
14	110 kV Tien Lang Substation		x	B	4,466	62	2		x(Gov form)		
15	110 kV Tien Lang transmission line		x	B	8,270	90				x	x
<b>F.</b>	<b>Ninh Binh PC</b>	1			0	0	0	1			
1	110 kV Substation and line from Gian Khau industry zone - Ninh Binh.	x		C	0	0		x			
<b>G.</b>	<b>Da Nang PC</b>	3		0B	0	0		3			
1	Rehabilitation and upgrading of Lien Tri 110 kV substation	x		C		0		x			
2	Increasing productivity of 110 kV An Don substation	x		C		0		x			
3	Installation of 22 kV underground cable	x		C		0		x			
<b>H.</b>	<b>Khanh Hoa PC</b>	2	2	2B	7,537	21	2	2	1	1	2
1	110kV-25 MVA Ninh Thuy substation and transmission line		x	B						x	x
2	22kV underground Cable Network Bai Dai -	x		C				x			

No	Power company name of projects	Land acquisition		Category	LAA (m <sup>2</sup> )	Approx AH	Approx SAH	Resettlement plan preparation			EMR
		NNLA	TBA					NR	HBP	TBPI	
	Cam Ranh Tourism area										
3	110 kV Bai Dai substation		x	B	7,537	21	2		x(Gov form)		x
4	Rehabilitation of Rural Grid	x		C		0		x			
<b>I.</b>	<b>PC2</b>	2	3	3B	17,944	26	2		1	1	3
1	Tan Huong 110 kV substation and tee-off	x		C				x			
2	Song Hau 110 kV substation and tee-off		x	B	5,184	4				x	x
3	Chau Thanh 110 kV substation and tee-off		x	B	8,938	4	2		x(Gov form)		x
4	An Tay 110 kV substation and tee-off	x		C				x			
5	My Phuoc–An Tay 110 kV Line		x	B	3,822	18				x	x
<b>J.</b>	<b>HCMC PC</b>	4	1	1B	193	2		4		1	1
1	Transmission line 110 kV Thu Duc–Tang Nhon Phu		x	B	193	2	0			x	x
2	Installation of second Transformer at Da Kao 110kV GIS substation	x		C				x			
3	Installation of second transformer at Thi Nghe (So Thu) 110kV GIS substation	x		C				x			
4	Transmission line 110 kV Cat Lai–Xa Lo	x		C				x			
5	Transmission line Nam Sai Gon –Nam Sai Gon	x		C				x			
<b>K.</b>	<b>Dong Nai PC</b>	3	1	1B	10,695	100	0	3	1	0	1
1	Ong Keo 110kV substation and transmission line		x	B	10,695	100			x(Gov form)		x
2	Installation of second transformer at Tan Mai 110 kV substation	x		C				x			
3	Installation of 2nd Transformer at Tam An 110 kV substation	x		C				x			
4	Binh Son 110 kV substation and transmission line	x		C				x			
<b>85</b>	<b>Total</b>	<b>45</b>	<b>41</b>	<b>41 B</b>	<b>670,117</b>	<b>2,499</b>	<b>199</b>	<b>45</b>	<b>7</b>	<b>34</b>	<b>40</b>

AH = affected household, EMR= external monitoring required, GIS = Gas Insulated Substation, HBP= have been prepared, kV = kilovolt, LAA= land acquired area, LV= low-voltage, NNLA= number of new land acquisition, NR= not required, SAH= severely affected household, TBA= to be acquired, x= Yes.  
Source: Electricity of Viet Nam.

## **ECONOMIC AND FINANCIAL ASSESSMENT OF SUBPROJECTS**

### **A. Introduction**

1. Economic and financial assessment of subprojects is conducted by estimating economic internal rate of return (EIRR) and financial internal rate of return (FIRR). Feasibility studies under this guarantee program are prepared by National Power Transmission Corporation (NPT) and other power companies (subsidiaries of Viet Nam Electricity [EVN]) in accordance with the government regulation. The government decree<sup>1</sup> provides the guideline for the preparation of those feasibility studies. This appendix explains the government guidelines and criteria for the feasibility study of subprojects, and shows economic assessment, prepared by EVN staff, of the 220 kilovolt (kV) Trang Bang–Tay Ninh transmission line subproject as a case model for this guarantee program. For consistency in undertaking such analysis for the other subprojects, a methodology has been developed for the use of EVN's staff and is provided as Supplementary Appendix I.

### **B. Subproject Economic and Financial Criteria**

2. In accordance with a government decree No.12/2009, EVN subsidiaries prepare feasibility study reports of subprojects, which cover following five categories:

- (i) investment necessity and objective;
- (ii) project size, scope, construction area, work items, technologies, and capacity;
- (iii) implementation solutions, including project management, general plan on ground clearance and resettlement, architectural design plan, and project operation and labor;
- (iv) assessment of environmental impacts; and
- (v) project investment plan, including project cost estimates.

3. Project investment plans include total cost estimate, capital arrangement capacity, capital sources and the capacity to allocate capital according to the implementation schedule, the capital repayment plan, and analysis and assessment of the project's economic, financial, and social benefits. According to this guidance, investment costs and economic assessment of the Tran Bang–Tay Ninh transmission line were prepared by EVN staff.

### **C. Economic Costs and Benefits for Tran Bang–Tay Ninh Transmission Line Subproject**

4. The economics of the subproject are analyzed based on comparing the cost and benefits of without and with the subproject. The project costs of Tran Bang–Tay Ninh transmission line is estimated at \$25.52 million. This cost covers a 42 kilometer 220 kV transmission line, equipment, project management cost, and physical contingencies. In addition, operation and maintenance cost is 2% of the investment. The EIRR was calculated on the basis of the base costs and physical contingencies.

5. The economic benefits of the subproject are estimated by incremental sale as a result of this subproject, reduction of losses, and reduction of unserved energy. The economic benefits

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<sup>1</sup> Decree No.12/2009/ND-CP of February 12 2009 on management of investment projects on the construction of works.

were measured by the incremental sales from the new capacity of the distribution system. Incremental sales in kilowatt-hours (kWh) were calculated by subproject component. The economic benefits from incremental sales were computed from the volume of incremental sales from the projects multiplied by the value of kilowatt-hours sale attributable to this project (\$0.061/kWh). The benefit resulting from loss reduction and reduction of unserved energy are estimated based on the volume of reduction multiplied by the value of kilowatt-hours lost (\$0.0651/kWh) or value of kilowatt-hours of unserved energy (\$0.65/kWh). The EIRR calculation is in Table A8.1.

**Table A7.1: Economic Internal Rate of Return (EIRR) Calculation**

Year	With Project (\$1,000 costs)				Without Project (benefit)					
	Investment cost	O&M cost	Loss value	Unserved energy value	Total costs	Loss value	Unserved energy value	Incremental energy	Total benefits	Benefit cost
2009+2010	25516.2				25,516.2				0.0	(25516.2)
2011		510.3	952.1	1,539.2	3,001.6	2,798.3	5,577.0	2,822.6	11,197.9	8,196.3
2012		510.3	1,247.0	1,996.0	3,753.3	2,888.8	5,577.0	3,659.6	12,125.4	8,372.1
2013		510.3	1,711.0	2,710.0	4,931.3	2,982.4	5,577.0	4,969.4	13,528.8	8,597.5
2014		510.3	2,184.0	3,424.0	6,118.3	3,079.3	5,577.0	6,279.0	14,935.3	8,817.0
2015		510.3	2,667.0	4,138.0	7,315.3	3,179.6	5,577.0	7,589.0	16,345.6	9,030.3
2016		510.3	3,160.0	4,823.0	8,493.3	3,283.4	5,577.0	8,899.0	17,759.4	9,266.1
2017		510.3	3,662.0	5,566.7	9,739.0	3,390.9	5,577.0	10,208.0	19,175.9	9,436.9
2018		510.3	3,700.0	5,566.7	9,777.0	3,502.2	5,577.0	10,208.0	19,287.2	9,510.2
2019		510.3	3,738.0	5,566.7	9,815.0	3,617.5	5,577.0	10,208.0	19,402.5	9,587.5
2020		510.3	3,777.0	5,566.7	9,854.0	3,736.9	5,577.0	10,208.0	19,521.9	9,667.9
2021		510.3	3,816.0	5,566.7	9,893.0	3,860.7	5,577.0	10,208.0	19,645.7	9,752.7
2022		510.3	3,855.0	5,566.7	9,932.0	3,988.9	5,577.0	10,208.0	19,773.9	9,841.9
2023		510.3	3,895.0	5,566.7	9,972.0	4,121.8	5,577.0	10,208.0	19,906.8	9,934.8
2024- 2040		510.3	3,936.0	5,566.7	10,013.0	4,259.7	5,577.0	10,208.0	20,044.7	10,031.7
									<b>NPV=</b>	<b>44,451.55</b>
									<b>EIRR=</b>	<b>34%</b>

( ) = negative, O&M = operations and maintenance.

Source: Viet Nam Electricity.

6. The EIRR of the project is 34%. The net present value when discounted at 112% is \$44.45 million.

#### **D. Capital Costs and Financial Benefits for Tran Bang–Tay Ninh Transmission Line Subproject**

7. The FIRR was calculated on the basis of the base costs and physical contingencies.

8. The FIRR was calculated over 30 years. The financial benefits were measured by the incremental sales from the new capacity of the distribution system. Incremental sales in kilowatt-hours were calculated by subproject component. The financial benefits from incremental sales were computed from the volume of incremental sales from the projects multiplied by sales profit of \$0.051/kWh. The project is assumed to purchase electricity at \$0.0359/kWh and sell it at \$0.0410/kWh. The operation and maintenance cost is assumed to be 2.0% of the capital cost. The FIRR calculation is in Table A11.2.

**Table A7.2: FIRR Calculation**  
(D '000)

Year	Capex	O&M cost	Energy bought (Gwh)	Purchase cost	Outflow	Energy sold ( Gwh )	Inflow	Net cashflow
2009-2010	28,981		—	—	28,981	—	—	(28,981)
2011		580	464	16,663	17,242	473	19,384	2,142
2012		580	608	21,817	22,396	613	25,133	2,736
2013		580	833	29,902	30,482	832	34,128	3,646
2014		580	1,058	37,992	38,571	1,052	43,123	4,551
2015		580	1,284	46,085	46,664	1,271	52,118	5,453
2016		580	1,509	54,181	54,760	1,490	61,113	6,352
2017-2040		580	1,735-1,707	61,284-62,281	61,863-62,861	1,710	70,108	8,244-7,246
							<b>FIRR</b>	<b>17.5%</b>

( ) = negative, Capex = capital expenditures, O&M = operation and maintenance.

Source: Viet Nam Electricity.

9. The FIRR of the project after tax is 17.5%, which exceeds the weighted average cost of capital (WACC) of 10.45% (internal rate of borrowing estimated by EVN). The net present value of the after-tax cash flows, when discounted at the WACC, is D21.3 million.

#### E. Conclusion

10. The EIRR of the project is 34%. The net present value when discounted at 112% is \$44.45 million. Sensitivity analysis indicates that the EIRR will exceed the benchmark value of 12% under the event of cost overrun of 10% and 20%. Given the overall objectives of the subproject, the economic performance is deemed acceptable, and the subproject is considered economically viable and sustainable.

11. The FIRR is 17.5%, compared with the project WACC of 10.45%. Sensitivity analysis indicates that the FIRR will exceed the WACC under the event of cost overrun of 10% and 20%. Given the overall objectives of the subproject, the financial performance is deemed acceptable, and the subproject is considered financially viable and sustainable.

## OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. The implementation supervision consultant will supervise on an intermittent and random basis the procurement and the implementation of construction works to ensure completion of the project in accordance with the contract provisions and the approved design and compliance with the environmental and social safeguards requirements. An international consulting firm, in association with a suitable national consulting firm(s) or individuals, will be recruited by the Asian Development Bank (ADB) in accordance with its Guidelines on Use of Consultants (2007, as amended from time to time). A consulting firm will be recruited under quality- and cost-based selection method, with a ratio of 80:20.

2. The scope of work will consist of two different tasks: (i) developing the documentation in compliance with ADB requirement during the preconstruction stage; and (ii) monitoring during construction.

### A. Preconstruction Stage

3. The resettlement, social, and environmental consultants will be responsible for fielding a team of experienced specialists to assist the 11 power companies to

- (i) prepare resettlement plans in compliance with the project's resettlement framework, ADB's Involuntary Resettlement Policy (1995), Operations Manual Section F2/OP, and Public Communications Policy (2005); and
- (ii) prepare initial environmental examination in compliance with ADB's Environmental Assessment Policy and Environmental Assessment Guidelines (2003).

4. On an intermittent basis the procurement specialist will

- (i) review and comment on the procurement plans submitted by the executing agency,
- (ii) review the first draft bidding documents to be used by Viet Nam Electricity's subsidiaries,
- (iii) review the bidding process of subprojects selected on a random basis; and
- (iv) review and comment the quarterly progress reports received from the executing agency.

### B. Construction and Post-Construction Stage (Monitoring)

5. The team will be required to provide monitoring reports to each of the power companies and to ADB during project implementation. The purpose of the monitoring activities is to ensure the requirements of the procurement and safeguard documentation are met.

6. Monitoring reports covering all aspects will be required on a bi-annual basis during the construction period for each subproject. Once the subprojects are completed and operational, monitoring reports will be required on an annual basis for the first 2 years.

7. The consultant is expected to provide 78 person-months of services, comprising 10 person-months of international and 68 person-months of national consultant services with expertise in procurement, environmental, and social issues.

**INDICATIVE TERMS AND CONDITIONS OF THE PROPOSED GUARANTEE**

[This information was deemed confidential according to exception # 8 and 9 of ADB's Public Communications Policy.]