



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

---

Project Number: 38196  
November 2005

Proposed Loan  
Socialist Republic of Viet Nam:  
Northern Power Transmission Expansion Sector  
Project

## CURRENCY EQUIVALENTS

(as of 15 November 2005)

Currency Unit – dong (D)

D1.00 = \$0.00006291

\$1.00 = D15,895

For the purpose of calculations in this report, the exchange rates of \$1.00 = D16,000

## ABBREVIATIONS

|       |   |  |
|-------|---|--|
| ADB   | – | Asian Development Bank                               |
| AIDS  | – | Acquired immunodeficiency syndrome                   |
| CARB  | – | Compensation and Resettlement Board                  |
| CPPMB | – | Central Power Project Management Board               |
| CPRGS | – | Comprehensive Poverty Reduction and Growth Strategy  |
| DRC   | – | district resettlement committee                      |
| DSCR  | – | debt service coverage ratio                          |
| EIRR  | – | economic internal rate of return                     |
| EMP   | – | environment management plan                          |
| ERA   | – | Electricity Regulatory Authority                     |
| EVN   | – | Electricity of Viet Nam                              |
| FIRR  | – | financial internal rate of return                    |
| GDP   | – | gross domestic product                               |
| GMS   | – | Greater Mekong Subregion                             |
| HIV   | – | human immunodeficiency virus                         |
| HQHPP | – | Huoi Quang Hydropower Project                        |
| ICB   | – | international competitive bidding                    |
| IEE   | – | initial environmental examination                    |
| IOE   | – | Institute of Energy                                  |
| IPP   | – | independent power producer                           |
| JBIC  | – | Japan Bank for International Cooperation             |
| LCB   | – | local competitive bidding                            |
| LIBOR | – | London interbank offered rate                        |
| MARD  | – | Ministry of Agriculture and Rural Development        |
| MOI   | – | Ministry of Industry                                 |
| MONRE | – | Ministry of Natural Resources and Environment        |
| NPPMB | – | Northern Power Project Management Board              |
| NPV   | – | net present value                                    |
| OCR   | – | ordinary capital resources                           |
| PDMP  | – | Power Development Master Plan                        |
| PPC   | – | provincial people's committee                        |
| PRC   | – | People's Republic of China                           |
| RAP   | – | resettlement action plan                             |
| RF    | – | resettlement framework                               |
| RP    | – | resettlement plan                                    |
| SERF  | – | shadow exchange rate factor                          |
| Sida  | – | Swedish International Development Cooperation Agency |

|      |   |                                  |
|------|---|----------------------------------|
| SLHP | – | Son La Hydropower Project        |
| SOE  | – | state-owned enterprise           |
| STD  | – | sexually transmitted disease     |
| TA   | – | technical assistance             |
| WACC | – | weighted average cost of capital |

### WEIGHTS AND MEASURES

|     |   |  |
|-----|---|--|
| GWh | – | gigawatt-hour (1,000 kWh)                |
| kV  | – | kilovolt (1,000 volts)                   |
| km  | – | kilometer                                |
| kW  | – | kilowatt (1,000 watts)                   |
| kWh | – | kilowatt-hour (1,000 watt-hours)         |
| MVA | – | megavolt-ampere (1,000 kilovolt amperes) |
| MW  | – | megawatt (1,000 watts)                   |
| TWh | – | terawatt-hours                           |

### NOTES

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

|                         |   |
|-------------------------|---|
| <b>Director General</b> | R. Nag, Director General, Mekong Department   |
| <b>Director</b>         | J. Cooney, Director, Infrastructure Division, Mekong Department                     |
| <b>Team leader</b>      | A. Jude, Principal Project Specialist, Mekong Department                            |
| <b>Team members</b>     | M. Huddleston, Sr. Social Development/Resettlement Specialist,<br>Mekong Department |
|                         | S. Kawazu, Counsel, Office of the General Counsel                                   |
|                         | A. Musa, Financial Specialist, Mekong Department                                    |
|                         | P. Perera, Financial Specialist, Mekong Department                                  |
|                         | M. Sultana, Social Development/Poverty Reduction Specialist, Mekong<br>Department   |
|                         | S. Tu, Environment Specialist, Mekong Department                                    |

## CONTENTS

|  | <b>Page</b> |
|--|-------------|
| LOAN AND PROJECT SUMMARY   | i           |
| MAP  | v           |
| 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  | 2           |
| III. THE PROPOSED PROJECT  | 7           |
| A. Impact and Outcome  | 7           |
| B. Outputs   | 7           |
| C. Special Features  | 8           |
| D. Cost Estimates  | 9           |
| E. Financing Plan  | 10          |
| F. Implementation Arrangements   | 10          |
| IV. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS, AND RISKS                                | 13          |
| A. Financial Analysis  | 13          |
| B. Economic Analysis   | 14          |
| C. Poverty Analysis  | 14          |
| D. Impacts   | 14          |
| E. Risks   | 16          |
| V. ASSURANCES  | 17          |
| A. Specific Assurances   | 17          |
| VI. RECOMMENDATION   | 19          |
| APPENDIXES   |             |
| 1. Sector/Subsector Analysis   | 20          |
| 2. External Assistance to the Power Subsector  | 25          |
| 3. Financial Performance and Projections of Electricity of Viet Nam                  | 26          |
| 4. Design and Monitoring Framework   | 31          |
| 5. Candidate Subprojects   | 34          |
| 6. Subproject Appraisal Report Format  | 35          |
| 7. Cost Estimates of the Candidate Subprojects                                       | 36          |
| 8. Implementation Schedule   | 37          |
| 9. Tentative List of Contract Packages for Appraised Subprojects                     | 38          |
| 10. Outline Terms of Reference of Consultants  | 39          |
| 11. Economic and Financial Analyses  | 43          |
| 12. Summary Resettlement Framework and Plan  | 54          |
| 13. Summary Poverty Reduction and Social Strategy                                    | 59          |
| 14. Summary Environmental Due Diligence of Son La and Huoi Quang Hydropower Projects | 64          |
| 15. Summary Social Due Diligence of Son La and Huoi Quang Hydropower Projects        | 67          |

SUPPLEMENTARY APPENDIXES (available on request)

- A. Financial Management Assessment
- B. Resettlement Framework
- C. Resettlement Plan
- D. Environmental Due Diligence for Son La and Huoi Quang Hydropower Projects
- E. Social Due Diligence Report on Son La and Huoi Quang Hydropower Projects

## LOAN AND PROJECT SUMMARY

|                               |   |
|-------------------------------|---|
| <b>Borrower</b>               | Socialist Republic of Viet Nam  |
| <b>Classification</b>         | Targeting classification: General intervention<br>Sector: Energy<br>Subsector: Transmission and distribution<br>Theme: Sustainable economic growth<br>Subtheme: Fostering physical infrastructure development   |
| <b>Environment Assessment</b> | Category B Sensitive: An initial environmental examination was prepared, and its summary initial environmental examination was circulated to the Board on 10 August 2005.   |
| <b>Project Description</b>    | The Project represents a 5-year time slice of Electricity of Viet Nam's (EVN) transmission expansion program, covering 500 kilovolt (kV) and 220 kV transmission lines and associated substations. The Project covers the northern part of Viet Nam, which is relatively poor. The Project will enable power to be supplied to the planned industrial zones in the region, thereby facilitating employment and income-generating opportunities. Thus, it will benefit the poor and ethnic minorities living in the project area. The Project will also create the potential for power interconnection between Viet Nam and the People's Republic of China.  |
| <b>Rationale</b>              | <p>Economic growth has been averaging about 7% per year over the past decade. This, in turn, has fueled growth in demand for electricity by about 15% per year. This rapid economic expansion has helped Viet Nam reduce the share of the population living in poverty from 58% in 1993 to 25% in 2005. The Government's aim is to maintain this economic growth until 2010, and to reduce poverty incidence to 19%. Due to the strong economic growth, Viet Nam's electricity supply deficit is growing, especially during the dry season, due to its heavy dependence on hydropower. To meet the load growth, the Government plans to more than double the current installed capacity to 22,600 megawatts (MW) by 2010. If not addressed quickly and effectively, this deficit will constrain the quality and reliability of electricity supply to rural, industrial, commercial, and residential consumers in northern Viet Nam. Load shedding and significant voltage fluctuations are prevalent, undermining the operating cost structures of businesses across industry, services, and trade.</p> <p>With increased generation capacity, transmission bottlenecks will worsen, increasing transmission losses, unless the transmission system in the north is strengthened and developed. EVN envisages an investment requirement of \$17.5 billion up to 2010, which will not materialize without long-term finance. While local finance is available, the terms are comparatively short. The Asian Development Bank (ADB), through its intervention, can be a</p> |

catalyst for additional finance for EVN's investment program. A robust and reliable transmission network with an enabling environment will attract increased private sector participation in generation, transmission, and distribution. Policy dialogue on safeguard issues, and ADB's involvement in reviewing and providing comments to refine EVN's environmental and social policy and procedures, will contribute to EVN's adoption of best practices in safeguard policies and implementation of safeguard measures.

Through its loan covenants, the proposed Project will further the ongoing power sector reforms to restructure EVN and create a viable electricity supply industry in Viet Nam, as well as to improve confidence of private sector investors in the nascent regulatory framework.

### Impacts and Outcome

The Project will strengthen the northern transmission network to improve system reliability, remove transmission bottlenecks, reduce transmission losses, and facilitate efficient utilization of existing and planned power plants. ADB's programmed interventions in the sector for 2006–2010 will support power sector reforms aimed at establishing a "single-buyer" power market structure and transparent regulation of the sector by 2009.

### Cost Estimates

The proceeds of the ADB loan will be used to finance subprojects under EVN's transmission expansion program. The subprojects are estimated to cost \$452.7 million, including physical and price contingencies, and interest and other charges during construction. This comprises a foreign exchange cost of \$226.2 million and a local currency cost of \$226.5 million equivalent.

### Financing Plan

| Financing Source          | (\$ million)     |                | Total        | %            |
|---------------------------|------------------|----------------|--------------|--------------|
|                           | Foreign Exchange | Local Currency |              |              |
| ADB                       | 226.2            | 133.8          | 360.0        | 79.5         |
| EVN                       | 0                | 92.7           | 92.7         | 20.5         |
| <b>Total Project Cost</b> | <b>226.2</b>     | <b>226.5</b>   | <b>452.7</b> | <b>100.0</b> |

ADB = Asian Development Bank, EVN = Electricity of Viet Nam.

Source: Asian Development Bank estimates.

### Loan Amount and Terms

A loan of \$360 million from ADB's ordinary capital resources will be provided under ADB's London interbank offered rate (LIBOR)-based lending facility. The loan will have a 25-year term, including a grace period of 5 years, an interest rate determined in accordance with ADB's LIBOR-based lending facility, a commitment charge of 0.75% per annum, and such other terms and conditions set forth in the draft loan and project agreements.

### Allocation and Relending Terms

The Government of Viet Nam will act as the Borrower for the ADB loan. The loan proceeds will be onlent to EVN, as the Executing Agency, on terms acceptable to ADB, and at ADB's interest rate

applicable to ordinary capital resources loans, plus an onlending fee, set at 0.2% per year.

|   |   |
|---|---|
| <b>Period of Utilization</b>              | Until 31 December 2010  |
| <b>Estimated Project Completion Date</b>  | 30 June 2010  |
| <b>Implementation Arrangements</b>        | <p>The Project will be implemented using a sector loan approach. The subprojects that have not been appraised will be submitted for ADB's approval during implementation. EVN will be responsible for planning, designing, contracting, testing, and commissioning the subprojects. For each subproject that has not been appraised, EVN will submit an appraisal report with an initial environmental examination report and a resettlement plan (RP) to ADB for approval. EVN will also provide ADB with half-yearly progress reports for project monitoring.</p> <p>The Project will use the Northern Power Project Management Board (NPPMB) and the Central Power Project Management Board (CPPMB) as the implementing agencies. NPPMB will be responsible for the upgrading and construction of the 500 kV and 220 kV substations and transmission lines, while CPPMB will be responsible for the 500 kV/220 kV Soc Son station.</p> |
| <b>Executing Agency</b>                   | Electricity of Viet Nam   |
| <b>Procurement</b>                        | Equipment and materials to be financed under the loan will be procured in accordance with ADB's <i>Guidelines for Procurement</i> .   |
| <b>Consulting Services</b>                | The following consultants services are required: (i) international resettlement consultants to assist NPPMB in preparing and implementing the RPs, (ii) international environmental consultant to assist NPPMB in implementing the environment management plan (EMP), (iii) domestic environmental consultants for monitoring and implementing the EMP, and (iv) domestic gender specialist to implement the gender strategy. The international and domestic consultants will be recruited individually in accordance with ADB's <i>Guidelines on the Use of Consultants</i> . The Government requested advance action for recruitment of consultants to minimize front-end delays in project implementation. ADB approved early recruitment, and informed the Government that this would not commit ADB to finance the consultants.  |
| <b>Project Benefits and Beneficiaries</b> | By strengthening and developing the northern transmission network, the Project is expected to enable efficient and reliable delivery of electricity to consumers, particularly benefiting industrial, commercial, and residential customers in the country. By supporting industrial and commercial activity, the Project will create jobs, as well as improve the productivity and quality of outputs in the manufacturing sectors. This will enhance production   |

and economic growth in the north, increasing employment and income-earning opportunities for the poor. The Project will remove transmission bottlenecks and reduce transmission losses, ensuring availability of more electricity for rural electrification.

## **Risks and Assumptions**

The financial and economic viability of the Project depends on the implementation of the other components (ongoing projects) of power system expansion in northern Viet Nam. These include significant investments in new power generation capacity, as well as transmission capacity outside the scope of the proposed Project. Mobilization of these investments requires concerted efforts by EVN and other public sector investors, as well as private sector financing. EVN and the Government are creating the enabling environment by removing entry barriers for private sector participation (domestic and foreign) through proposed power sector reforms, as required by the 2004 Electricity Law. To support the reforms, the Government established the Electricity Regulatory Authority in October 2005.

A potential concern is the failure of the economy to continue achieving its assumed economic growth rate of 7.5%. A slower economic expansion would lower the growth in electricity demand. However, the analysis of risks shows that the economic viability of the investment program can withstand extreme adverse changes in anticipated economic growth, and in other key risk factors and assumptions.

Implementation delays and resettlement could create risks of delays in the commissioning of power projects under construction in northern Viet Nam. These delays would constrain the economic growth of the northern region. ADB has engaged the Government in policy dialogue on the environment and social safeguard requirements for two ongoing hydropower projects—the 2,400 MW Son La Hydropower Project (SLHPP) and 560 MW Huoi Quang Hydropower Project (HQHPP). About 95,000 people will be displaced by these two projects. Stand-alone technical assistance is being formulated that would address (i) strengthening and improving the implementation of an EMP for SLHPP and HQHPP, including building the capacity of the Ministry of Natural Resources and Environment (MONRE) and EVN to implement the EMP for SLHPP; (ii) capacity building needs of MONRE and EVN for undertaking broader cumulative and strategic environmental assessments to address safeguard issues across the sector; and (iii) strengthening institutional capacity of local stakeholders for implementing SLHPP livelihood and RPs.

No technological risk exists. EVN has been using extra high voltage transmission technology, and has sufficient in-house technical capability for project design management and implementation, and operation and maintenance.



## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the Socialist Republic of Viet Nam, for the Northern Power Transmission Expansion Sector Project.

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

### A. Performance Indicators and Analysis

2. Viet Nam continued to be one of the world's fastest growing economies in 2004. Supported by buoyant consumption and investments, economic growth reached 7.5% in 2004. The Government's next 5-year socioeconomic development plan (SEDP, draft)<sup>1</sup> targets 7.5%–8.0% annual gross domestic product (GDP) growth for 2006–2010, creating 8 million jobs, eliminating hunger, and reducing poverty to 15%–18% by 2010.<sup>2</sup> The Government and its development partners, including the Asian Development Bank (ADB), recognize that the economic expansion was critical in reducing poverty in Viet Nam. To sustain economic growth and continue reducing poverty, Viet Nam needs to modernize and develop its physical infrastructure by maintaining an investment level of at least 35% of GDP.

3. The Comprehensive Poverty Reduction and Growth Strategy (CPRGS),<sup>3</sup> which the Prime Minister approved in November 2003, acknowledges the importance of large-scale infrastructure in achieving poverty reduction through growth. It also recognizes the financing gap, and the need for alternative resources, such as the use of ADB's ordinary capital resources (OCR), for selective revenue-earning investment projects in the power and transport sectors.

4. Developing an efficient and stable power sector is essential to achieving the 7.5% average annual growth target up to 2010. Electricity demand is forecast to increase by 15%–16% per year between 2004 and 2010, and 12% per year thereafter, fueled by robust economic growth. In 2004, electricity demand was 8,283 megawatt (MW), while electricity consumption was 39.9 terawatt-hours (TWh). During 1995–2004, electricity consumption increased more than threefold (11.2 TWh to 39.9 TWh), and system losses fell from 21.7% to 13.5%. The revised Fifth Power Development Master Plan (PDMP) for 2001–2010<sup>4</sup> forecasts electricity generation to reach 100–112.7 TWh, with peak demand reaching 17,570–19,550 MW, in 2010.

5. Despite such growth in electricity demand, end-use consumption totaled about 500 kilowatt-hours (kWh) per capita for 2004, compared with an average of about 1,300 kWh per capita per year in low- and middle-income countries. Industrial and residential sectors accounted for about 45% of electricity consumption in 2004. Even though the service sector has played a role in the demand growth, industry and residential consumption primarily are responsible for the growth in electricity demand. Rapid growth in the manufacturing sector drove the increase in industrial electricity usage. Industry's share of GDP increased from 22.6% in 1995 to 30.8% in 2004. Industrial electricity demand growth rose by 18.5% during 2001–2004, and is expected to continue driving demand.

---

<sup>1</sup> This draft will be approved by the Prime Minister in April 2006. All development partners including ADB, will then align their country strategies and program assistance with the approved SEDP.

<sup>2</sup> Household living standard surveys found that the poverty rate was around 58% in 1993, 37% in 1998, 29% in 2002, and is estimated to be 25% in 2005.

<sup>3</sup> Government of Viet Nam. November 2003. *Comprehensive Poverty Reduction and Growth Strategy*. Viet Nam.

<sup>4</sup> Ministry of Industry, Government of Viet Nam, 2003. The *Sixth Power Development Master Plan* is being prepared, and the Government is expected to approve it in December 2005.

6. An increase in household access and the addition of loads other than basic lighting pushed up residential electricity demand. Between 1995 and 2004, about 30 million new people were connected, representing 37% of the population. Viet Nam started from a very low residential consumption level, which helped explain the high growth rates. As disposable incomes rose since the mid-1990s, electrical household appliances have increased. The current average consumption of about 20 kWh/month per person among residential electricity users is low, and is likely to increase.

7. To meet the electricity demand growth, Electricity of Viet Nam (EVN) expects to increase its installed generating capacity from 10,871 MW in 2004 to 22,600 MW by 2010. This means adding about 2,000 MW per year between 2005 and 2010. This is more than a threefold increase over the average capacity increase each year during the 1990s. In addition, high-voltage and medium-voltage transmission and distribution systems need to be improved commensurately to address transmission bottlenecks and reduce system losses. The sector analysis is in Appendix 1.

8. The key challenges facing the power sector are maintaining adequate investments in new generating capacity, and expanding transmission networks to meet the rapid growth in electricity demand. These are critical to maintaining the growth, competitiveness, and industrialization of Viet Nam's economy. The Fifth PDMP, revised in March 2003, states that the power sector will require \$17.5 billion in investment for 2004–2010, comprising \$13.0 billion for generation and \$4.5 billion for transmission and distribution. EVN's internal cash generation can provide only half of the funding requirement. Therefore, official development assistance, private sector investment, and domestic commercial banks will have to fill the financing gap. The operational and financial performance of EVN has improved consistently over the past 5 years. Although the average tariff at around \$0.052/kWh is below the long-run marginal cost, the self-financing ratio and debt service coverage ratio have been maintained. EVN's financial accounts are strictly separate from the Government budget, and EVN receives no Government budget subsidy support for investment with the exception of funds for resettlement. The increased borrowing of the sector to finance the large capital investment program will require improvement in the sector's internal cash generation.

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

### **1. Government Policies**

9. The Government recognizes the need to continue sector reforms to meet the challenges facing the power sector, especially the financing challenge. In recent years, EVN has developed a much greater commercial orientation, and has signed power purchase agreements with the private sector for two power generation projects<sup>5</sup> with a combined capacity of 1,435 MW under the build, operate, and transfer scheme. The Government's power sector policy, as stated in the new Electricity Law,<sup>6</sup> is to (i) develop a power market on the principles of transparency and competition to achieve economic efficiency, (ii) attract investments from state and non-state

---

<sup>5</sup> ADB. 2002. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Socialist Republic of Viet Nam for the Mekong Energy Company Limited (Phu My 2.2 Power Project)*. Manila (Loan 1856-VIE, for \$50 million [loan] and \$25 million [partial risk guarantee], approved on 2 July 2002); and ADB. 2003. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Socialist Republic of Viet Nam for the Phu My 3 Power Company*. Manila (Loan 1923-VIE, for \$40 million [loan] and \$35 million [partial risk guarantee], approved on 18 October 2003).

<sup>6</sup> The new Electricity Law was approved on 3 December 2004 and became effective on 1 July 2005.

sectors, (iii) encourage foreign private sector investments, and (iv) ensure the rights of the consumers and the investors in the sector. To achieve these objectives, the Ministry of Industry (MOI) is responsible for establishing a competitive power market for Viet Nam.

10. MOI prepared the road map for Electricity Market Establishment and Development in Viet Nam, which envisages corporate restructuring of EVN to establish the first stage of the power market. The first stage (2005–2008) of the power market is to establish an internal pilot market for EVN-owned power plants and plants in which EVN holds a dominant share. The existing independent power producers (IPP), and the three strategic multipurpose hydropower plants, will not take part in the internal power market. The IPPs will dispatch power according to their power purchase agreements. During the first stage, the following will be developed and piloted: (i) market rules; (ii) regulatory, technical, and commercial institutions; and (iii) capacity required for operating the second phase (2008–2010) of the proposed power market (i.e., single buyer-based competitive generation market with the participation of non-EVN power plants).

11. The Government policy is also to encourage the development of independent power generation outside of EVN systems. The IPPs' generating capacity has increased from 620 MW in 2002 to over 2,400 MW in 2004, accounting for almost 22% of the installed generating capacity. Vinacoal and PetroVietnam are developing IPPs, both wholly owned or as joint ventures with EVN. Small hydropower plants are also being developed by local firms, for connection to the grid through power purchase agreements with EVN.

12. EVN will complete its corporate restructuring program by 2008. EVN's internal power market is scheduled to start in the first quarter of 2006, with the competitive generation market beginning in 2009. The Electricity Regulatory Authority (ERA) for the power sector will be established within the MOI as a separate institution by the end of 2005 (para. 20). The Government is aware of the concern over the degree of independence of the single buyer and the system operator if EVN continues to own and control a significant stake in the equitized<sup>7</sup> power plants. To mitigate these concerns, transparent rules for market operation, dispatching of power plants, settlement of payments and appropriate regulatory oversight will be required. If these conditions cannot be guaranteed, the single buyer and the system operator will have to be separated from EVN. To address these concerns, the Government asked ADB to provide technical assistance (TA) for designing appropriate market rules and regulatory instruments to make the emerging power market attractive to potential investors.

13. As an active member of the Greater Mekong Subregion (GMS) Power Sector Cooperation Program, Viet Nam is financing a 220 kV transmission line linking with Cambodia and the People's Republic of China (PRC). Further, Viet Nam is planning power transmission interconnections with other GMS countries. Viet Nam has ratified the Inter-Governmental Agreement on GMS Power trading, and is a signatory to the memorandum of understanding on Initiating Power Trading among GMS countries, which was signed at the Second GMS Summit in July 2005.

## **2. External Assistance to the Sector**

14. ADB has approved \$306.3 million in loans to the power sector of Viet Nam. The loans were primarily for the extension and rehabilitation of high-voltage transmission networks and substations, medium- and low-voltage substations, and distribution networks in the northern,

---

<sup>7</sup> Equitized means partial privatization with less than 50% divestization of assets.

central, and southern regions of the country. In addition, ADB has provided \$9.78 million in TA, comprising six project preparatory TAs and 11 advisory TAs (Appendix 2). The recent advisory TA on the road map<sup>8</sup> for power sector reform has contributed significantly to the recently enacted Electricity Law, and established the framework for a wholesale electricity market. ADB also has supported private sector investment in power generation through its private sector operations.

15. The other major funding agencies are Agence Française de Développement (AFD), Japan Bank for International Cooperation (JBIC), World Bank, and Swedish International Development Cooperation Agency (Sida). AFD has cofinanced Loan 2128-VIE<sup>9</sup> with ADB for €40 million, and will cofinance the proposed Project. JBIC, the biggest lender to the power sector in Viet Nam, has committed since 1993 approximately \$3 billion, or 33.7% of its official development aid (ODA) budget, to Viet Nam. These funds were mainly for gas- and coal-fired thermal power plants, hydropower plants, and 500 kV transmission lines. The World Bank has committed \$1.35 billion in loans to the sector for generation, transmission, distribution, and rural electrification. In addition, it has provided TA in (i) power sector policy and strategy, (ii) institutional strengthening, (iii) private sector participation in infrastructure, (iv) gas master plan, (v) petroleum product pricing, (vi) development of the Electricity Law, and (vii) promotion of renewable and rural electrification.

16. Sida, which began supporting the power sector in the 1980s, has committed \$103 million in ODA funds (loans and TAs). Its assistance includes the recently equitized (partially privatized) Song Hinh (70 MW) multipurpose hydropower project. Sida is financing the rehabilitation of rural distribution systems in selected provinces. With the Norwegian Development Cooperation Agency, Sida also is supporting Viet Nam's preparation of a hydroelectric power development plan. Other bilateral sources of assistance to the sector include Canada, France, Germany, and United Kingdom. ADB coordinates closely with AFD, JBIC, World Bank, and bilateral donors to ensure that actions are complementary and policy advice on the sector is consistent.

### **3. Asian Development Bank Strategy for the Power Sector**

17. In line with the CPRGS, ADB's strategy for the power sector is to develop infrastructure needed for economic growth and poverty reduction. ADB's assistance for the sector has six main priorities: (i) supporting sector reform, including market restructuring, and sector and corporate governance; (ii) providing institutional strengthening to implement reforms required by the 2004 Electricity Law; (iii) creating an enabling environment for private sector participation in a competitive power market; (iv) expanding and optimizing transmission and distribution systems; (v) encouraging power interconnections in the GMS by helping Viet Nam to improve its high-voltage power transmission network; and (vi) encouraging energy conservation, and ensuring environmental and social sustainability. The Private Sector Operations Department, in coordination with Mekong Department and Office of Cofinancing Operations, is promoting public-private partnership projects for mobilizing private sector investments to complement ADB's investments transparently.

18. Given the high electrification ratio of about 88%, as well as the availability of financing from the World Bank for rural electrification, the financing gap in the power distribution

<sup>8</sup> ADB. 2001. *Technical Assistance to the Socialist Republic of Viet Nam for the Road Map for Power Sector Reform*. Manila.

<sup>9</sup> ADB. 2004. *Report and Recommendation of the President to the Board of Directors for the Proposed Loan to the Socialist Republic of Viet Nam for the Northern Power Transmission Sector Project*. Manila.

subsector is small. Further, the financial return of remaining rural electrification investments does not justify financing through OCR. Hence, future ADB investments in the power sector will focus on power generation and transmission.<sup>10</sup> ADB has a comparative advantage in expanding the scope of engagement to financing environmentally sustainable power generation projects, and high-voltage transmission lines linking Viet Nam with other GMS countries. The institutional capacity building program under the GMS Regional Power Trading Coordination Committee provides further opportunities for Viet Nam to participate in the GMS Power Grid.

19. The investment loans to be financed with OCR will be coupled with policy dialogue to improve technical, financial, and economic viability, as well as the social and environmental sustainability, of Viet Nam's power generation expansion programs. TAs will be targeted to sector entities, and national and provincial enforcement agencies, to improve their capacity to deal with adverse impacts of some of these power generation projects.

#### 4. Policy Dialogue

20. Since 1995, ADB has engaged the Government and EVN in policy dialogue on power sector reform under its previous loans and TAs. The sector reform covenants have included (i) promulgating the Electricity Law, (ii) preparing secondary laws or decrees to facilitate implementation of the Electricity Law, (iii) establishing an independent regulator, and (iv) ensuring that EVN and its power companies<sup>11</sup> undertake steps to commercialize their operations in line with the recommendations of TA 2345-VIE.<sup>12</sup> However, due to high-profile failures of restructured and competitive power markets worldwide, the Government proceeded cautiously. It spent time examining the most appropriate structure and strategy for power sector reform. As a result, the Electricity Law was approved in November 2004 and became effective on 1 July 2005. The Prime Minister on 19 October 2005 approved MOI's decision on the establishment of an Electricity Regulatory Authority within MOI. The Government has directed EVN to continue corporatizing<sup>13</sup> and equitizing (i.e., partially privatizing) some of its operating units.

21. Despite the ambitious plans to divest a large portion of EVN-owned power plants through an equitization program, EVN will continue to own fully or partly a large proportion of the generation capacity during the first and second stages of the power market development. The dominant market share of EVN would create apprehensions among new investors. To make the emerging power market attractive to potential investors, these fears would have to be addressed through appropriately designed market rules and regulatory instruments. The power market reform program in Viet Nam during 2006–2010 comprises (i) setting up the power market and developing the market rules for a single buyer market, (ii) establishing the regulatory agency for the sector, (iii) cooperate restructuring of EVN to meet the requirement of a single buyer market, and (iv) procuring new generation capacity consistent with the least-cost power development plan. A proposed ADB TA on Power Market Design would support the implementation of the road map. Policy dialogue aimed at establishing a transparent and competitive power market in Viet Nam is closely coordinated with AFD, JBIC, and World Bank to guide MOI in implementing the road map. AFD is financing a resident advisor to assist MOI in

<sup>10</sup> A power sector road map will be prepared in early 2006 based on the updated Sixth PDMP.

<sup>11</sup> Power Company 1, Power Company 2, Power Company 3, Power Company Hanoi, Power Company Ho Chi Minh, Power Company Haiphong, and Power Company Dong Nai.

<sup>12</sup> ADB. 1995. *Technical Assistance to the Socialist Republic of Viet Nam for the Improvement of Financial Management of Power Companies*. Manila.

<sup>13</sup> Form a separate entity with a legal personality.

implementing the initial work program, which entails setting up market institutions and capacity building and training of key institutions of the proposed power market. The proposed Project will augment and enhance previous sector reform through appropriate loan covenants.

22. ADB's policy dialogue with the Government on social and environmental safeguard requirements has resulted in the Government issuing improved legislation on compensation and resettlement. Decree 197/2004/ND-CP on Compensation Assistance and Resettlement when the State Recovers Land was issued on 3 December 2004.<sup>14</sup> In addition, EVN has taken concrete measures to strengthen its appraisal capacity and construct management departments with full-time staff to handle resettlement issues. The Government has prepared a Master Plan for Hydropower Development with assistance from Sida and Norway. Given the need to ensure such hydropower development is sustainable, environmentally sound, and sensitive to impacts and risks, the Government requested ADB assistance to build the capacity of Ministry of Natural Resources and Environment (MONRE) and EVN to undertake cumulative impact assessment and strategic environment assessment. The Government also requested assistance to address sector-wide environmental and social issues, and to take an integrated water resource management approach for hydropower projects.

## 5. Lessons Learned

23. Loans 1358<sup>15</sup> and 1585<sup>16</sup> were closed in 2002 and 2005, respectively. These two loans had to be extended due to delays in procurement, resettlement, and compensation. However, the overall implementation was satisfactory in terms of outputs, and most of the financial and safeguard-related covenants were complied with. The key lessons learned from these loans were the need to ensure that (i) technical designs are completed before procurement of equipment and material to match design requirements; (ii) delegation of procurement approval to the project management board is obtained; (iii) the process for bid document approval and contract award applicable to ADB-financed contracts under the loan is clarified at the outset; (iv) a satisfactory resettlement plan and framework is in place before loan approval; and (v) specific environmental requirements (including documentation and reporting) for testing and disposal of transformers are included in loan covenant and bidding documents.

24. The loan covenants on tariff reforms and sector reforms were not complied with fully. Tariff covenants were set at a level above the financial cost recovery tariff, and the Government could not justify increasing tariffs as EVN was meeting the financial ratio covenants. As a result, ADB and the World Bank have agreed that financial ratios would be used to set the average tariff. These ratios would be based on audited financial statements, which focus on internal cash generation, such as debt service coverage and self-financing ratios that also indirectly capture profitability. These ratios also would capture the financing requirement of the large capital expenditure program, and the increased returns expected by private investors in the sector. The financial performance and projections of EVN are in Appendix 3.

---

<sup>14</sup> ADB. 2004. *Technical Assistance to the Socialist Republic of Viet Nam for Enhancing the Resettlement Legal Framework and Capacity Building*. Manila.

<sup>15</sup> ADB. 1995. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Socialist Republic of Viet Nam for the Power Distribution and Rehabilitation Project*. Manila (Loan 1358-VIE, for \$80 million, approved on 8 June 1995).

<sup>16</sup> ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Socialist Republic of Viet Nam for the Central and Southern Viet Nam Power Distribution Project* (Loan 1585-VIE, for \$100 million, approved on 27 November 1997).

25. The TAs attached to loans 1358 (footnote 15) and 1585 (footnote 16) concentrated on providing (i) capacity building to the sector on financial management of EVN's distribution units, (ii) cost-based electricity tariff setting, (iii) commercialization of distribution companies, and (iv) setting up a power sector regulatory framework. As a result, the corporate governance of the sector has improved. The more recent TA on the road map for power sector reform contributed significantly to the new Electricity Law, and laid the foundation for the proposed sector reforms aimed at establishing a wholesale electricity market. ADB is processing an advisory TA to guide the Government in making strategic decisions regarding the (i) market structure; (ii) role of EVN and its subsidiaries, and the relationship among these entities; (iii) nature of the regulatory regime and key regulatory mechanisms; and (iv) the terms of power purchase arrangements for new and equitized power plants.

26. The Government's approval process, particularly for project procurement, remains time consuming, which has led to project implementation delays. To compensate, the Project has undertaken advance procurement action. Moreover, project management responsibilities have been delegated to the Northern Power Project Management Board (NPPMB) and Central Power Management Board (CPPMB) to ensure smooth implementation. As these agencies are dependent units of EVN, EVN—as the Executing Agency for the Project—will monitor and oversee project implementation. The Project will follow the sector loan approach, and the Government has delegated the approval for project procurement to EVN to expedite implementation. These measures are expected to reduce procurement time greatly and avoid the delays experienced in the previous two projects.

### III. THE PROPOSED PROJECT

#### A. Impact and Outcome

27. The Project is to (i) strengthen the northern transmission network to improve system reliability and quality of supply, (ii) facilitate power transfers by removing transmission bottlenecks, (iii) reduce transmission losses, and (iv) facilitate efficient utilization of existing and planned power plants. The design and monitoring framework is in Appendix 4.

#### B. Outputs

28. The Project has two major components. Part A focuses on the construction, expansion and upgrading of the 500 kV and 220 kV transmission lines, enabling the transfer of additional power to improve system reliability and enhance the efficient utilization of existing and new power plants in the north. Part B entails the construction, upgrading, and expansion of 500 kV and 220 kV substations. The construction of a new 500 kV/220 kV substation at Soc Son provides a strategic link between generation plants in eastern (thermal) and western (hydro) parts of northern Viet Nam and industrial load centers in Hanoi and Haiphong. It also offers the potential for subsequent interconnection with the PRC. This will simplify load dispatch, and improve system performance and system reliability. The candidate subprojects are described briefly in Appendix 5.

29. **Technical Justification and Criteria for Subproject Selection.** The Institute of Energy (IOE) carried out least-cost generation expansion and long-term planning studies for the country, using the integrated resource planning approach to ensure optimum use of the Viet Nam's resources. Based on these studies, EVN and IOE formulated the power transmission expansion network through exhaustive engineering design calculation. EVN and IOE employed state-of-the-art, commercially available power system simulation software packages to perform

detailed power flow studies, short-circuit calculations, and dynamic and transient stability analyses. The aim was to ensure a robust, yet optimal, transmission network based on internationally proven extra-high voltage alternating current transmission technology.

30. **Subproject Selection.** To be eligible for selection, a subproject should (i) be technically feasible, (ii) be part of EVN's revised Fifth PDMP (or subsequent revision thereof), (iii) not be classified as category A,<sup>17</sup> and (iv) not include transmission lines emanating from power generation stations. Based on available data and the eligibility criteria, ADB and EVN jointly appraised the three core subprojects in northern Viet Nam: (i) 269 kilometers (km) of double circuit 500 kV transmission lines covering Son La–Hoa Binh–Nho Quan, (ii) 152 km of double circuit 220 kV transmission lines covering Thanh Hoa–Nghì Son–Vinh, and (iii) expansion of the Van Tri 220 kV substation.

31. Selection of addition subprojects after loan approval should satisfy the eligibility criteria (para. 30). Further, EVN will follow procedures that include (i) a technical feasibility study for each subproject, (ii) a resettlement plan (RP) that meets the requirements of the resettlement framework (RF), and (iii) an environmental assessment that follows the environmental assessment and review procedures specified in the initial environmental examination (IEE). The technical feasibility study will include a detailed engineering design of the subproject, including an indication that this is the least-cost solution among the alternatives, cost estimates, procurement packaging, and an implementation schedule. For each subproject to be appraised, EVN will submit an appraisal report to ADB for approval. Appendix 6 provides the format for the subproject appraisal report.

### C. Special Features

32. **Subregional Context.** Although not a GMS initiative, the Project will promote cooperation in the subregion. The 220 kV transmission line from Tuyen Quang to Yen Bai, scheduled for completion in 2009, would link with the Soc Son 500 kV/220 kV substation, planned for completion by 2009. This would create the potential for robust power interconnection between Viet Nam and PRC in the future.

33. **Capacity Building.** Based on policy dialogue with the Government (para. 22), EVN will strengthen the environmental unit to work on resettlement issues. In addition, ADB has engaged the Government in policy dialogue on the environment and social safeguard requirements of the 2,600 MW Son La Hydropower Project (SLHPP) and 560 MW Huoi Quang Hydropower Project (HQHPP), which the Government and EVN are financing.<sup>18</sup> The Government welcomed ADB's assistance in strengthening the capacity of MONRE and Ministry of Agriculture and Rural Development (MARD) to address environmental and resettlement matters under the two projects, as well as sector-wide issues. In this context, three stand-alone advisory TAs are being formulated. The first is to assist EVN in strengthening and improving the Environmental Management Plan (EMP) of the proposed SLHPP and HQHPP, and to build EVN's capacity for environmental management and watershed management through the implementation of EMPs involving multiple stakeholders. The second TA, with broader capacity building input, focuses on strengthening MONRE's capability in cumulative impact assessment and strategic

<sup>17</sup> Category A are projects with potential significant adverse environmental impacts. An environmental impact assessment (EIA) is required to address significant impacts.

<sup>18</sup> These two hydropower projects are estimated to cost \$3 billion. The first unit (600 MW) of SLHPP will be commissioned in late 2010, second unit in 2011, third and fourth units in 2012. HQHPP will be commissioned in 2011.

environmental assessment, mainly for the hydropower subsector. The third TA is to strengthen the institutional capacity for formulating and implementing a comprehensive resettlement plan and livelihood programs for SLHPP. The capacity building will target (i) MARD; (ii) the provinces of Son La, Lai Chau, and Dien Bien; (iii) SLHPP; and (iv) local stakeholders. The enhanced capacity will help the Government implement resettlement plans and livelihood programs for other power projects.

34. **Sector Loan.** EVN's successful implementation of three World Bank projects and two ADB projects, which supported Power Company 1, Power Company 2, and Power Company 3, demonstrated its competence as an executing agency. A sector loan, therefore, is considered appropriate to finance a portion of EVN's investments over the next 5 years. With the sector loan approach, ADB can support EVN's initiatives to improve power system performance and facilitate further sector reform. A sector loan approach will internalize the selection of subprojects that meet technical, financial, economic, environmental, and social criteria appropriate to modernizing the power sector. The sector loan approach also will provide EVN with sufficient flexibility to utilize ADB financing optimally.

#### D. Cost Estimates

35. The Project consists of two main components: Part A, with investments in 500 kV and 220 kV transmission lines; and Part B, with investments in 220 kV and 500 kV substations. The cost estimates of the three core subprojects and additional subprojects to be implemented during 2006–2010 are summarized in Table 1. Detailed cost estimates are in Appendix 7.

**Table 1: Cost Estimates**  
(\$ million)

| Item                                      | Foreign Exchange | Local Currency | Total        |
|---|------------------|----------------|--------------|
| A. Base Cost                              |                  |                |              |
| 1. 500 kV and 220 kV Transmission Lines   | <b>125.1</b>     | <b>139.0</b>   | <b>264.1</b> |
| Appraised Subprojects                     | 66.1             | 68.1           | 134.2        |
| Additional Subprojects to be Appraised    | 59.0             | 70.9           | 129.9        |
| 2. 500 kV and 220 kV Substations          | <b>47.1</b>      | <b>10.3</b>    | <b>57.4</b>  |
| Appraised Subprojects                     | 1.9              | 0.3            | 2.2          |
| Additional Subprojects to be Appraised    | 45.2             | 10.0           | 55.2         |
| 3. Resettlement                           | 0.0              | 15.0           | 15.0         |
| 4. Administration and Consulting Services | 0.2              | 16.1           | 16.3         |
| <b>Subtotal (A)</b>                       | <b>172.4</b>     | <b>180.4</b>   | <b>352.8</b> |
| B. Contingencies                          |                  |                |              |
| Physical Contingencies                    | 9.7              | 12.3           | 22.0         |
| Price Contingencies                       | 12.8             | 33.8           | 46.6         |
| <b>Subtotal (B)</b>                       | <b>22.5</b>      | <b>46.1</b>    | <b>68.6</b>  |
| C. Interest During Construction           | 26.1             | 0.0            | 26.1         |
| D. Commitment Fee                         | 5.2              | 0.0            | 5.2          |
| <b>Total (A+B+C+D)</b>                    | <b>226.2</b>     | <b>226.5</b>   | <b>452.7</b> |

kV = kilovolt.

Source: Asian Development Bank estimates.

**E. Financing Plan**

36. The Government has requested a loan of \$360 million from ADB's OCR to help finance the Project. The loan will have (i) a 25-year term, including a grace period of 5 years; (ii) an interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; (iii) a commitment charge of 0.75% per year; and (iv) such other terms and conditions set forth in the draft Loan Agreement and Project Agreement. EVN has provided ADB with the reasons for its decision to borrow under ADB's LIBOR-based lending facility based on these terms and conditions. Further, EVN demonstrated that it made its decision independently, without relying on any communication or advice from ADB.

37. ADB will finance 79.5% of the estimated project cost, including 100% of the foreign exchange cost (Table 2). EVN will provide \$92.7 million equivalent in local currency as counterpart financing, which accounts for 20.5% of total costs. This will finance civil works, resettlement, consultancy, and taxes and duties.

38. Although commercial cofinancing is not envisioned, cofinancing from commercial sources might be mobilized in the future to complement ADB financing for this sector. Such cofinancing could benefit from ADB credit enhancements, including ADB's guarantee instruments. These would be presented separately for Board consideration as they arise.

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

| <b>Financing Source</b> | <b>Foreign Exchange</b> | <b>Local Currency</b> | <b>Total</b> | <b>%</b>     |
|-------------------------|-------------------------|-----------------------|--------------|--------------|
| ADB                     | 226.2                   | 133.8                 | 360.0        | 79.5         |
| EVN Counterpart Funding | 0.0                     | 92.7                  | 92.7         | 20.5         |
| <b>Total</b>            | <b>226.2</b>            | <b>226.5</b>          | <b>452.7</b> | <b>100.0</b> |

ADB = Asian Development Bank, EVN = Electricity of Viet Nam.  
Source: ADB estimates.

**F. Implementation Arrangements**

**1. Project Management**

39. EVN will be the executing agency responsible for overall implementation of the Project. The Project will be implemented as a sector loan, and additional subprojects will be introduced during implementation. The Government has agreed to delegate the authority for approving subprojects to EVN. Once approved, these subprojects will be submitted to ADB for financing under the Project. NPPMB and CPPMB, as the implementing agencies, will be responsible for the day-to-day implementation of the 500 kV and 220 kV project substations and transmission lines. Adequately staffed project offices have been established in the Hanoi headquarters of NPPMB and CPPMB to supervise the Project. International consultants, working with qualified domestic consultants, will assist NPPMB and CPPMB with environment management planning and implementation of resettlement plans.

**2. Implementation Period**

40. Project implementation will start in 2006 with the recruitment of consultants. Bid documents for international competitive bidding (ICB) packages will be prepared concurrently

with technical designs to allow bid documents to be approved quickly. Delivery of equipment will be phased to suit NPPMB's and CPPMB's storage capacities and capability of erection contractors. The Project is expected to be completed by June 2010. The implementation schedule is in Appendix 8.

### **3. Procurement**

41. Equipment and materials to be financed under the loan will be procured in accordance with ADB's *Guidelines for Procurement*. ICB will be used for supply contracts estimated at more than \$1 million, while international shopping will be used for contracts below \$1 million. Civil works will be procured through local competitive bidding (LCB) for contract values of up to \$3 million; ICB will be used for contract values more than \$3 million (Appendix 9). ADB will review and approve all subprojects, including those that have not been appraised yet. The relevant sections of ADB's anticorruption policy will be included in all ADB-financed contracts during bidding.

### **4. Consulting Services**

42. EVN will engage and finance about 300 person-months of domestic consultants for (i) detailed technical design; (ii) bid preparation and procurement; (iii) construction supervision; (iv) implementing the EMPs; (v) preparing and implementing the RPs; and (vii) socioeconomic impact assessment, and project performance monitoring.

43. The ADB loan will finance two international consultants for a total of 10 person-months. The international consultants will (i) prepare subproject RPs; (ii) guide and supervise resettlement committees (RC); (iii) train staff of NPPMB, CPPMB, and RCs; and (iv) assist NPPMB in the preparation of IEE and environmental management. In addition, ADB will finance 14 person-months of domestic consultants to (i) periodically monitor compliance with the approved RPs by meeting with project-affected people, RCs, NPPMB, and other agencies as appropriate, including independent domestic resettlement monitoring consultants; (ii) monitor compliance with approved EMP for the subprojects; and (iii) implement the gender strategy. NPPMB will recruit the international and domestic consultants as individuals in accordance with ADB's *Guidelines on the Use of Consultants*. The outline terms of reference for the consultants are in Appendix 10. The Government requested advance action for recruitment of consultants to minimize front-end delays in project implementation. ADB approved early recruitment, and informed the Government that this would not commit ADB to financing the consultants.

### **5. Advance Action**

44. ADB approved advance procurement for civil works on 18 August 2005 up to the approval of contract award, which covers the prequalification of contractors, bidding, and bid evaluation for the civil works contract packages. It does not include awarding of contracts, however. The Government has been advised that approval of advance procurement does not commit ADB to finance the Project.

### **6. Disbursement Arrangements**

45. All disbursements under the ADB loan will be carried out in accordance with ADB's *Loan Disbursement Handbook* (January 2001) and ADB's *Interim Guideline for Disbursement Operations, LIBOR-Based Loan Products* (July 2002), both as amended from time to time.

Since most of the payments will be made for large contracts, direct payment and commitment procedures will be used to withdraw the loan funds.

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

46. EVN will prepare regular progress reports for the Project and submit them to ADB quarterly. The reports will include a description of physical progress, difficulties encountered, and a summary of financial accounts for the Project (i.e., project expenditures during the period, year to date, and total to date). EVN will submit the progress reports to ADB within 1 month of the end of the semiannual period. EVN will maintain separate accounts for the Project. Within 6 months of the close of the financial year, EVN will submit annual audited project accounts and annual audited financial statements of EVN. The annual financial statements will be consolidated for all of EVN's operations. The financial management systems and procedures of EVN were assessed and found to meet ADB's requirements (Supplementary Appendix A).

47. EVN will continue to engage independent auditors to audit its annual financial statements and annual project accounts, with the memorandum on issues identified during the audit process. These will be submitted with the respective reports. As part of the harmonization of procedures of external funding agencies, the standards to be followed in auditing and financial statements have been agreed upon with the World Bank. For future contracts and revisions, the auditors' terms of reference will be provided to ADB. The accounts will be prepared using International Accounting Standards, and the audit will be carried out using International Standards of Auditing. The auditors will be required to provide an opinion on EVN's compliance with ADB's financial covenants, and indicate the details of the calculation for financial ratios in the covenants, in conformity with the definitions contained in the Loan and Project Agreements.

## **8. Anticorruption**

48. ADB's *Anticorruption Policy* was explained to, and discussed with, the Government and EVN. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the Project. To support these efforts, relevant provisions of ADB's *Anticorruption Policy* are included in the loan regulations and bidding documents for the Project. In particular, ADB-financed contracts for the Project shall include provisions specifying the right of ADB to audit and examine the records and accounts of EVN and all contractors, suppliers, consultants, and other service providers as they relate to the Project. To prevent corruption, EVN will establish a supervisory body to prevent interference in the bidding processes. EVN also will hold regular briefings between NPPMB and CPPMB management and the local prosecutor's office, where warnings about, or information on, corrupt practices can be assembled and discussed, and appropriate actions taken.

## **9. Project Performance Monitoring and Evaluation**

49. EVN will prepare progress reports and submit them to ADB semiannually. The reports will provide a narrative of progress made during the period, changes in the implementation schedule, problems encountered, performance of the project implementation consultants, and the work to be carried out in the next period. EVN will handle the performance monitoring, which will be based on performance indicators/targets stipulated in the design and monitoring framework.

## **10. Project Review**

50. ADB will field a project inception mission soon after loan approval to initiate implementation. ADB will review the implementation and operation of the Project based on the quarterly reports, and will meet with EVN, NPPMB, CPPMB, and the Government semiannually to discuss project progress. A midterm review will be carried out 2–3 years after loan effectiveness. Representatives of ADB and EVN will take part in the review, allowing for any necessary midcourse corrections to ensure successful project implementation and achievement of objectives. A project completion report will be submitted to ADB within 3 months of project completion.

## **IV. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS, AND RISKS**

51. The proposed Project comprises individual subprojects, including 500 kV and 220 kV transmission lines and a series of 220 kV/500 kV substations. These are included in the Government's power sector investment program to meet growing electricity demand in northern Viet Nam. As these subprojects are not stand-alone investments, the economic and financial analyses were based on the least cost investment program in power generation and transmission for the northern region during 2007–2015. The economic and financial analyses are in Appendix 11.

52. The financial and economic viability was examined by comparing the costs and benefits of meeting demand growth from 2007 to 2030 under the “with” investment program scenario and the “without” investment program scenario. The “without” investment program scenario assumes no investments in the north beyond 2007, but accounts for the possibility of meeting demand until 2010 using the spare capacity of the system in 2007. The investment program for the central and southern regions is assumed to continue. The point at which the demand would be curtailed on the north–south 500 kV line is reached when the incremental demand in the north is met by power flows from the south in the absence of additional investments in the north under the “without case”.

53. The “with” case assumes the planned investments will be made during the time-slice (2007–2015). It also assumes that any incremental sales at the end of the time slice would require additional investments. Hence, financial and economic benefits due to incremental sales after 2015 are considered in the analysis. The economic and financial benefits, derived from comparing the performance of the power sector under the “with” and “without” investment scenarios, are mainly due to (i) higher sales; (ii) lower transmission losses; and (iii) lower fuel cost per unit as the generation and transmission system will be based on the least-cost planning criteria under the “with” scenario, creating an optimal plant mix. Incremental costs of the “with” case were evaluated in terms of capital expenditures in generation, load dispatch, transmission, distribution to consumers, and the cost of energy purchased from IPPs.

### **A. Financial Analysis**

54. The analysis was conducted for 2005–2030, when power plants built during 2004–2010 would end their useful economic life. The financial evaluation of the investment program was undertaken in real terms using constant 2004 prices. The cost estimates and financial projections in nominal terms were converted to real terms by adjusting for the projected effects of foreign and domestic inflation, as well as for currency fluctuations. Incremental costs and benefits attributable to the investment program during 2007–2015 were derived by comparing EVN under “with” and “without” project scenarios. The financial internal rate of return (FIRR) for

the investment program, computed on an after-tax basis, is 14.1%. This compares favorably with EVN's weighted average cost of capital (WACC) for this period, which is 6.9% computed on an after-tax basis. When discounted at WACC, the proposed investment program has a net present value (NPV) of D52.5 trillion. The investment program is considered financially viable and sustainable. Sensitivity and risk analysis indicates that the FIRR for each component and the investment program overall are robust with (i) reduced sales growth of 12%–6%, (ii) 20% increase in capital costs, (iii) 20% reduction in willingness to pay, (iv) no tariff increase in 2007, and (v) 20% increase in operational and maintenance cost.

## **B. Economic Analysis**

55. The economic viability of the investment program was analyzed based on incremental costs and benefits, as compared with the “without” investment scenario. The economic benefits of meeting incremental electricity demands were valued based on willingness to pay and tariffs for each consumer category. A domestic price numeraire was used in the economic analysis, and a shadow exchange rate factor of 1.1 was applied to all costs and benefits valued at border prices. This shows that the investment program yields an economic internal rate of return (EIRR) of more than 23.1%. A sensitivity analysis was conducted with respect to key risks and assumptions. The result showed that the investment program is economically worthwhile even under combined extreme adverse conditions. The risk analysis showed that the risk of project failure is negligible (Appendix 11). In addition, a distribution analysis was carried out by allocating the difference between economic and financial benefits and costs to different stakeholders to identify the economic impacts or distortions in the sector. The tariffs for different consumer categories were compared with the relevant long-run marginal cost of supplying these consumers to identify further the cross-subsidies and other distortions in the sector.

## **C. Poverty Analysis**

56. The poverty analysis for the Project identified issues and assessed impacts at the sector level, since identifying specific consumers was difficult. The share of households connected to the grid was 88%, and the majority of the poor are connected. Connection rates in the project areas ranged from 75% to 95%. These high connection rates imply that investments in transmission will benefit poor consumers directly across the economy by improving quality of supply and electricity services. Improved quality of services will reduce the cost of repair and repurchase of appliances, as well as improve the quality of lighting. Higher quality of supply implies substantial welfare impacts for poor households. From the household perspective, however, a reduction in electricity expenditure and increased value of leisure are significant. Lower electricity expenditure releases household funds for food, health, and education. Most new residential consumers are expected to be poor. The majority of benefits to the poor are expected to come from increasing demand for labor, resulting from improved services to industrial and commercial sectors in urban and semi-urban areas. The analysis indicates that these sectors will grow substantially in the medium term. Remittances from migrant labor will increase welfare and reduce vulnerability of rural households.

## **D. Impacts**

57. **Land Acquisition and Resettlement.** The two RPs prepared for the core subprojects were based on a preliminary technical design. The transmission routes were realigned to avoid densely populated areas and minimize resettlement impacts. The 40-meter wide transmission line corridor will require relocation of about 254 households, of which 43 do not have sufficient residential land to rebuild their houses. Therefore, these households will be provided with

another plot of residential land within the commune. For the tower foundations, the number of affected households and level of impacts are not known, as the locations of the towers will not be determined until the detailed design stage. The Summary Resettlement Framework and Plan is in Appendix 12. The full resettlement framework and resettlement plans are in Supplementary Appendixes B and C, respectively.

58. Satisfactory resettlement planning and implementation will mitigate adverse impacts. This will be carried out in accordance with ADB's *Policy on Involuntary Resettlement*, as well as the RPs and the RF adopted for the Project. The objective is to improve, or at least restore, living standards, income-earning capacity, and production levels of affected people. Special assistance will be provided to the severely affected and vulnerable people to help them improve their socioeconomic status. A gender analysis for the affected household is included in the summary poverty reduction and social strategy in Appendix 13.

59. **Environment.** The Project is categorized as "B" sensitive.<sup>19</sup> A summary IEE was prepared, circulated to the Board, and uploaded to the ADB Web site on 10 August 2005. The IEE includes a section on the candidate subproject environmental assessment and review framework, with the environmental selection criteria. The sample substations and transmission line will not be in or traverse any environmentally sensitive areas. Land acquisition will create some unavoidable impacts along the route of the two transmission lines, though anticipated impacts are considered manageable with adequate mitigation measures. The IEE provides an EMP to reflect best practices, which will ensure that the contractors adequately monitor and mitigate the impacts. The contractors, under the supervision of EVN during construction, will implement the EMP, which will be developed during the detailed design phase. Institutional arrangements for conducting and monitoring the EMP also are provided in detail in the IEE. Public consultations on project-related environmental issues have been carried out in each province, and will continue into the implementation phase of the Project. The Project will not consider category A subprojects.

60. **Social and Gender.** The Project will address capacity building at the grassroots level to increase the role of the community in resettlement monitoring and implementation. The social and gender strategy in the Summary of Poverty Reduction and Social Strategy (Appendix 13) includes capacity building for commune and villages leaders (men and women), leaders of mass organizations, and members of affected households. The increased community participation will facilitate implementation of Government decrees,<sup>20</sup> which aim to increase the role of the community in supervising and monitoring investments made in the interest of the community. Increased capacity at the community level will ensure its role in commune investment supervisory groups and grassroots democracy board. Decree 80 specially provides the community with opportunities to monitor the implementation and evaluate the results of the investment decision, including environmental impacts, and resettlement activities. The increased capacity of the commune leaders and mass organizations will enable effective implementation of the RP's socioeconomic support program. The sexually transmitted disease

---

<sup>19</sup> Projects judged to have some advance environmental impacts, but of lesser degree of significance than those for category A projects. An initial environmental examination (IEE) is required to determine whether or not significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.

<sup>20</sup> Decree No. 79/2003/ND-CP, issued on 7 July 2003, relates to Promulgating the Regulation on the Exercise of Democracy in Communes. Decree No. 80/2005/ND-CP, issued on 22 June 2005, relates to Assignment, Sale, Business Contracting and Lease of State Companies.

(STD)/HIV/AIDS<sup>21</sup> and trafficking awareness campaign will be included in the civil works contracts.

61. **Ethnic Minority.** Ethnic minorities make up between 26% and 66% of the population in the subproject areas. The majority lives in the area of the Son La–Nho Quan transmission line. The largest ethnic groups in the project area are the Muong and Thai, with smaller populations of H'mong, Dao, Kho Mu, and Sinh Mun. The ethnic minorities live in mixed villages with Kinh households. Like the Kinh, they work in wetland agriculture. Social analysis shows that these ethnic minorities are not any more vulnerable to the risks associated with resettlement and the spread of HIV/AIDS than Kinh households. Resettlement impacts will be mitigated through specific measures in the RF, RP, and gender strategy prepared for the Project. The STD/HIV/AIDS prevention and awareness programs in the civil works contracts will mitigate the health risks.

## **E. Risks**

62. Compensation, resettlement, and income restoration measures might not be delivered as agreed, thereby impoverishing affected people and delaying the start of civil works. NPPMB and CPPMB will have specialists to assist in implementing the RPs, and they will engage an independent monitoring organization.

63. The financial and economic viability of the proposed Project depends on the implementation of the other components of the power system's expansion in northern Viet Nam. These include significant investments in new power generation capacity, as well as transmission capacity outside the scope of the proposed Project. EVN and other public sector investors, as well as the private sector, must make concerted efforts to mobilize financing and successfully implement these projects. EVN and the Government are expected to create the enabling environment through proposed power sector reforms that remove entry barriers for third parties.

64. The financial projections for EVN have been prepared on the assumption that operational efficiency gains, proceeds from equitization, and tariff increases will be implemented in a timely manner to ensure EVN's compliance with financial covenants. If the underlying assumptions on fuel cost, cost of power purchased from IPPs, and shift in the consumer mix deteriorate from the assumed values, the required tariff increases would need to be adjusted. The sensitivity of financial ratios used as financial covenants to the adverse movements of these assumptions was assessed. This is especially important in the context of proposed reforms that would introduce limited competition in power generation under a single-buyer market structure. Establishing a regulatory body under the proposed Electricity Law with powers to set tariffs transparently on sound economic and financial grounds will mitigate this risk significantly.

65. Significant private investments in new projects, as well as in acquiring EVN-owned power plants (i.e., equitization), has been assumed. The financial proceeds from selling equity stakes also will make a significant contribution to EVN's cash flows. The assumption that the economy will continue to grow at 7.5% is a potential concern. Slower economic growth would reduce the rate of growth in electricity demand. However, the analysis of risks shows that the economic viability of the investment program would withstand extreme adverse changes in anticipated economic growth, and in other key risk factors and assumptions.

---

<sup>21</sup> HIV/AIDS means human immunodeficiency virus/acquired immunodeficiency syndrome.

66. The risks to ADB are that the environment and social mitigation measures for the SLHPP and HQHPP will not be implemented effectively. Environmental and social due diligence for the SLHPP and HQHPP was conducted. Its direct and cumulative impacts have been examined to understand more fully the risks associated with the proposed Project. Summaries of the findings are in Appendix 14 and Appendix 15, while the full due diligence reports are in Supplementary Appendixes D and E.

67. The EMP for the SLHPP needs to be strengthened. ADB will provide assistance to EVN to improve and implement the EMP. EVN is committed to completing the environment impact assessments (EIA) process of the SLHPP and implementing its EMP, with monitoring reports regularly submitted to ADB for review. TA will be provided to EVN and MONRE to build their capacity for cumulative and strategic environmental assessments to address sector-wide issues in the longer term. In addition, the resettlement planning and implementation of livelihood programs for 95,000 people to be displaced by the Project is weak. A capacity building TA will help MARD and provincial RCs improve the planning and implementation of the sustainable livelihood program for resettlers.

68. **Health Risks.** The Project will increase the potential for the spread of HIV/AIDS and other STDs due to the influx of workers during construction. This potential will be mitigated or minimized through a program to increase awareness and provide preventive measures for the local communities and the workforce.

## V. ASSURANCES

### A. Specific Assurances

69. In addition to the standard assurances, the Government has given the following assurances, which are incorporated in the legal documents:

- (i) **Sector restructuring.** The Government ensure that all EVN generation units except for the multipurpose power plants have been corporatized such that each generation unit (a) has become an independent unit, including independent accounting; or (b) has become a single-member limited liability company; or (c) has been equitized such that ownership is held by EVN and one or more other investors.
- (ii) **Financial ratios and reporting.** The Government will ensure that EVN will achieve at all times a self-financing ratio of at least 25%, a debt service coverage ratio of at least 1.5 times, and a long-term debt-equity ratio of at least 70:30 to ensure operating efficiency and financial sustainability. EVN will (a) maintain an internal audit function to undertake timely audit of project accounts in accordance with generally accepted accounting principles; and (b) submit to ADB its audited accounts and financial statements within 6 months of the end of each fiscal year.
- (iii) **Anticorruption.** EVN will ensure that its inspectorate department takes necessary action to prevent corruption by (a) supervising the bidding process, bid evaluation, and construction; (b) preventing interference in the bidding and evaluation processes; (c) briefing NPPMB and CPPMB management and local prosecutor's office regularly, where warnings about, or information on, corrupt practices can be assembled and discussed.

- (iv) **Land acquisition and resettlement.** EVN, through NPPMB and CPPMB, will engage and mobilize (a) resettlement specialist consultants to assist in preparing and implementing the RPs, and (b) an independent monitoring organization prior to commencement of any land acquisition activities. The Government will cause EVN and NPPMB to ensure that (a) the resettlement plan is carried out promptly and efficiently in accordance with all Government laws and regulations, ADB's *Policy on Involuntary Resettlement*, and the approved RF; (b) all affected people are given adequate opportunity to participate in resettlement planning and implementation; (c) the affected people are compensated and assisted prior to displacement from their houses, land, and assets such that they will be at least as well off as they would have been in the absence of the Project; (d) implementation of the RP is monitored by NPPMB and CPPMB, and provincial people's committee, and by the independent monitor, and related reports are submitted to ADB and EVN as stipulated in the resettlement plan; and (e) the RPs for nonappraised subprojects will be prepared in accordance with the agreed RF, and submitted to ADB for review and approval prior to being disclosed to the affected people. EVN will ensure that (a) funds needed for land acquisition and resettlement are allocated and disbursed in a timely manner; (b) the RP is updated and submitted to ADB within 3 months of completing the detailed measurement surveys; and (c) ADB is promptly advised of any substantial changes in the resettlement impacts and, if necessary, a revised RP is submitted to ADB for concurrence.
- (v) **Land acquisition and resettlement for SLHPP and HQHPP.** For these hydropower projects, the Government will cause MARD and the provincial resettlement committees to carry out the resettlement plans and sustainable livelihood programs in compliance with Special Decision 459/2004 of the Prime Minister.
- (vi) **Social unit.** EVN will strengthen its Appraisal and Construction Management Department with additional staff to handle resettlement matters on a full-time basis within 3 months of the date of project approval. The unit will be responsible for social and environmental issues, particularly resettlement planning and management, ethnic minority development planning and management, STD/HIV/AIDS awareness program, and, poverty and social impact assessments.
- (vii) **Environment.** EVN will ensure that (a) the subprojects are designed, constructed, operated, and maintained in accordance with the environmental laws and regulations of the Government and the *Environmental Policy* of ADB; (b) an environmental assessment and review framework is applied for each future candidate subproject prepared for submission to ADB for approval prior to subproject approval; (c) the EMP and the mitigation measures included therein, as specified in the IEE prepared for the Project, are implemented properly; (d) for a "B" sensitive subproject, a summary IEE will be prepared and made available to the general public at least 120 days before the subproject is approved; (e) no category "A" subprojects will be included in the Project for consideration; (f) any environmental permits, licenses, and clearances are obtained in a timely manner; (g) any adverse impact on the environment that may arise from the project implementation activities is mitigated promptly or minimized in accordance with the EMP; and (h) implementation of the EMP, including any safety breaches,

violation of environmental standards, and corrective measures taken thereto, is reported semiannually to ADB.

- (viii) **EMP for SLHPP and HQHPP.** EVN will ensure that these hydropower projects are constructed and commissioned in compliance with laws and regulations of the Government. EVN will implement the EMPs for SLHPP and HQHPP, including the downstream impacts management programs.
- (ix) **Poverty reduction.** EVN, through NPPMB, will ensure that civil works contracts with contractors will have provision to maximize employment of local poor persons who meet the job and efficiency requirements for construction of the transmission lines and substations. Such workers will be provided adequate on-the-job training.
- (x) **Other social issues.** EVN will ensure that all contracts under the Project incorporate provisions to the effect that contractors (i) comply with all applicable labor laws and related international treaty obligations, and so not employ child labor; (ii) provide safe working conditions for male and female workers; (iv) implement the provisions set forth in the project-specific Gender Strategy referred to in Section D of the Summary Poverty Reduction and Social Strategy (Appendix 13); and (v) carry out the HIV/AIDS and anti-trafficking education and awareness campaign in the campsites and corridors of influence, in coordination with international and national agencies working on this issue.
- (xii) **Counterpart funds.** EVN will ensure the provision of adequate counterpart funding, including actual costs of resettlement.

## VI. RECOMMENDATION

70. I am satisfied that the proposed loan would comply with the Articles of Agreement of ADB and recommend that the Board approve the loan of \$360,000,000 to the Socialist Republic of Viet Nam for the Northern Power Transmission Expansion Sector Project from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's LIBOR-based lending facility; a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft Loan and Project Agreements presented to the Board.

Haruhiko Kuroda  
President

29 November 2005

## SECTOR/SUBSECTOR ANALYSIS

### A. Sector Overview

1. Viet Nam is well endowed with energy resources, comprising hydropower, natural gas, petroleum, coal, and biomass. The hydropower potential of the country is estimated to be between 50,000 and 70,000 megawatt (MW), though only 4,198 MW has been developed. An additional 8,000 MW of hydropower is expected to be developed during 2005–2012. Viet Nam is a net exporter of petroleum products, amounting to 150,000 barrels per day (bbl/day). Viet Nam also has 415 billion cubic meters (cm<sup>3</sup>) of proven reserves of natural gas, with current production of 5 billion–7 billion cm<sup>3</sup> per year. Proven coal reserves total 3.8 billion tons, with current output of about 27 million tons per annum. Power generation uses more than 90% of Viet Nam's natural gas production and 4 million tons of coal per annum.

2. Electricity of Viet Nam (EVN), formed in 1995, is a vertically integrated state-owned corporation responsible for Viet Nam's power sector. EVN is organized as a strategic business unit with generation units (i.e., plants with a capacity of more than 60 MW) and power transmission (i.e., the transmission facilities of at least 110 kilovolt (kV)) as dependent accounting units (i.e., cost centers), and power distribution as independent accounting units (i.e., profit centers). Three power companies (PC1, PC2, and PC3) are responsible for power distribution in northern, southern, and central parts of the country. Four power distribution companies operate in four major cities: Hanoi, Ho Chi Minh City, Hai Phong, and Dong Nai. The Board of Management of EVN is responsible for overall business management, and has the authority to approve the business plan of EVN, approve new investments, and procure items below limits set by the Prime Minister. The Ministry of Industry (MOI) is responsible for policy and oversight of the power sector. A separate regulatory body for the sector does not exist.

3. The power generation mix in Viet Nam is summarized in the Table A1.1.

**Table A1.1: Power Generation Mix in Viet Nam**

| Type of Plant | Available Capacity<br>(MW) | Of which IPP<br>(MW) |                        |
|---------------|----------------------------|----------------------|------------------------|
| Hydro         | 4,228                      | 0                    |                        |
| Coal          | 1,255                      | 100                  | Vina Coal              |
| Natural Gas   | 4,460                      | 1,435                | Phu My 2.2 and Phu My3 |
| Furnace Oil   | 682                        | 497                  | Hiep Phuoc and Nomura  |
| Diesel        | 246                        | 0                    |                        |
| <b>Total</b>  | <b>10,871</b>              | <b>2,032</b>         |                        |

IPP = independent power producer, MW = megawatt.

Source: Institute of Energy, Viet Nam.

4. EVN's transmission network consists of a 500 kilovolt (kV) single circuit backbone line from north to south, and 220 kV and 110 kV network connecting the load centers and most of the power plants. The larger power complexes are directly connected to the 500 kV network. The north–south 500 kV transmission link is being converted to double circuit, while two 500 kV rings are planned in the north and south to connect the proposed large power plants to the load centers. The ongoing transmission augmentation aims mainly to complete the 500 kV and 220 kV ring, and upgrade the 220 kV/500 kV substations around Hanoi, Hai Phong, and Ho Chi Minh City to meet the rising demand.

5. The power companies purchase bulk power from EVN at administratively fixed bulk power tariffs at the 110 kV level or at medium voltage (i.e., 35 kV and 22 kV). EVN sets the bulk price tariffs to enable each power company to achieve a reasonable profit irrespective of its cost structure. The power companies directly supply electricity to industrial, commercial, and other consumers and the residential consumers in urban areas. By the end of 2004, 95% of communes and 88% of households had access to electricity, compared with 62% of communes and 50% of households in 1995. Under Viet Nam's unique approach to rural electrification, EVN provides a medium-voltage connection to the commune center, and the local community and the households mobilize funds to install and operate the low-voltage grid. The low-voltage grids are designed poorly and have high distribution losses (up to 20%–30%), which the national system loss figures do not capture. The end-user tariffs in rural areas, which are not regulated nationally, range from D700 to D900 per kilowatt-hour (kWh) (i.e., \$0.044–\$0.056/kWh)—two to three times the urban residential tariffs.

6. Electricity generation in Viet Nam has grown at annual compounded rate of 13.7% during 1995–2004. Since 2000, the annual growth rate has exceeded 14.9%. Electricity generation doubled from 23.7 terawatt-hours (TWh) in 1999 to 46.2 TWh in 2004. With gross domestic product (GDP) forecasted to grow faster than 7.5% a year for 2005–2010, and industrial output's share of GDP increasing, the rise in electricity demand is expected to continue. Electricity use in Viet Nam is growing from a very low base for a country of its size. In 1995, power sales of 11,185 gigawatt-hour (GWh) amounted to only 156 kWh per person per year. Even after electricity use grew more than threefold during 1996–2004, total end-use consumption amounted to only about 500 kWh per capita per year.

7. The operational and financial performance of EVN has improved consistently over the past 5 years. The transmission and distribution losses were reduced to 12.2% in 2005, compared with more than 21% in 1995, and the receivables are maintained at around 20 days. The average tariff at around \$0.052/kWh is below the long-run marginal cost (LRMC), which is estimated to be around 7.5 cents/kWh. Still, the self-financing ratio and debt service coverage ratio have been maintained within the prudential limits without explicit fiscal subsidies. The increased borrowing requirement of the sector to finance the large capital investment program will require further improvements in internal cash generation of the sector. The average tariff will have to be increased to \$0.06/kWh by 2010. The Government also intends to mobilize a significant portion of the resources required for new investments by divesting (i.e., equitization) power assets. The proposed power market is expected to provide investors in divested power plants, as well as in greenfield power plants, adequate comfort without resorting to explicit Government guarantees.

## **B. Sector Reforms**

8. The power sector policy, as enunciated in the new Electricity Law, is to develop a power market on the principles of transparency and competition to (i) achieve economic efficiency, (ii) attract state and nonstate investors to the sector, and (iii) ensure the legitimate rights of the consumers and investors in the sector. Further, the new law states that the Government's monopoly in the sector would be limited to power transmission, national load dispatch, and strategically important large power plants. Power distribution and nonstrategic power generation will be open to private investors. The law specifically encourages foreign private investments, and joint ventures between foreign investors and domestic enterprises in the power sector. To achieve these objectives, MOI is responsible for establishing a competitive power market for Viet Nam.

9. The Road Map for Electricity Market Establishment and Development, which MOI prepared, envisages the corporate restructuring of EVN to establish the necessary conditions for initiating the first stage of the power market. The first stage entails establishing an internal pilot market for EVN-owned power plants and the power plants in which EVN holds a dominant share. The independent power producers (IPPs) and three strategic multipurpose hydropower plants will not take part in the internal market. The IPPs will be dispatched according to the power purchase agreements (PPA). During the first stage, the following will be developed and piloted: (i) market rules; (ii) regulatory, technical, and commercial institutions; and (iii) capacity required for operating the second phase (2008–2010) of the proposed power market (i.e., single buyer-based competitive generation market with the participation of non-EVN power plants). The EVN internal power market is expected to start in late 2005, with competitive generation market beginning in 2009.

10. EVN-owned power plants would be converted into independent accounting units (i.e., profit centers), and some would be equitized (i.e., partially privatized). However, the three large multipurpose hydropower projects with a combined capacity of 3,000 MW (30% of installed capacity) would be retained as dependent units of EVN. As the first step in the equitization program, a 135 MW hydropower plant and a provincial distribution utility were equitized (i.e., partially privatized with more than 51% equity stake retained by EVN). Two other power plants, including the 1,000 MW Pha Lai coal power plant, are expected to be equitized by the end of 2005. The equitization of five more power plants and 15 provincial distribution utilities has been proposed for 2006, and EVN's ownership in the equitized entities would be reduced to 51%–60%.

11. The four transmission units, which are structured as dependent units of EVN, would be merged to form a wholly owned EVN subsidiary to own and operate the transmission network. EVN's stakes in the equitized provincial distribution utilities would be held through the seven regional power companies. These regional power companies would be converted from independent accounting units to wholly owned subsidiaries of EVN. The provincial distribution utilities will be equitized, with the regional power companies holding EVN's equity stake in the utilities. A market-based transfer pricing mechanism will replace the administratively fixed transfer pricing between EVN's transmission unit and the regional power companies. The provincial power utilities supplying rural and mountainous provinces will be provided with an explicit and transparent subsidy funded through a universal service charge. EVN's corporate restructuring program is expected to be completed by 2008.

12. The Electricity Regulatory Authority (ERA) for the power sector would be established as a separate institution within the MOI. The key functions of ERA during the first and second stages include (i) issuing and enforcing licenses to sector entities; (ii) advising the minister on market structure and industry restructuring policy; (iii) establishing the principals for setting tariffs, including transfer pricing between sector entities; (iv) developing tariffs for regulated activities; (v) approving power purchase agreements of the single buyer; (vi) ensuring the procurement of adequate new generation and transmission capacity; (vii) monitoring the progress of implementation of new generation and transmission projects; and (viii) monitoring the functioning of power market. The law does not clearly define the enforcement mechanism of regulatory actions, though the official decision establishing the regulator would clarify the enforcement powers of ERA.

### C. Sector Focus

13. Socially inclusive and environmentally sustainable economic growth is a pillar of Asian Development Bank (ADB's) country strategy for Viet Nam. Viet Nam's recent success in reducing poverty and improving the living conditions of its population was based on rapid and equitable economic growth, underpinned by a transition to a market-based economy with strong links to global markets. The competitiveness of Viet Nam's economy, especially the industrial sector, depends on the availability of cheap and reliable electricity. In this context, the Government has indicated its desire to borrow from ADB's ordinary capital resources (OCR) for revenue-earning investment projects. The first OCR-funded project was approved in 2004. Similarly, future ADB investments in the power sector would be financed by OCR. Viet Nam has not indicated interest in obtaining public sector ADB financing or technical assistance (TA) for non-power energy subsectors, such as coal, natural gas, and oil. However, the proposed Greater Mekong Subregion (GMS) Energy Sector Strategy would provide an opening for ADB to engage the Government on policy dialogue aimed at shared development and regional trading of Viet Nam's fossil fuel resources.

14. ADB's involvement in the power sector has been limited to financing power transmission and distribution projects, and providing TA for power reforms and commercialization of power entities. Given the high electrification rate of Viet Nam and the availability of \$450 million in financing from World Bank's Rural Energy I and II Projects, the financing gap in the power distribution sector is small. Further, the financial return from the remaining rural electrification investments does not justify financing through OCR. Hence, future ADB investments in the power sector will be focused on power generation and transmission. ADB has a comparative advantage in expanding the scope of engagement to financing environmentally sustainable power generation, and high-voltage transmission lines linking Viet Nam with other GMS countries. The institutional capacity building program envisaged under the GMS Regional Power Trading Coordination Committee would offer additional opportunities to assist Viet Nam's participation in the GMS power grid. As ADB has committed substantial resources to the expansion of the 500 kV transmission network in Viet Nam through Loan 2128-VIE<sup>1</sup> and the proposed Northern Power Transmission Expansion Sector Project, future ADB investments in the transmission will concentrate on establishing the critical transmission links in the proposed GMS power network. This includes the proposed Viet Nam–Lao People's Democratic Republic–Thailand 500 kV transmission line, and the Viet Nam–People's Republic of China 500 kV transmission line. TA for the former is being implemented, while the latter is being conceptualized.

15. ADB financing for the national projects in Viet Nam's power sector during 2007–2010 probably will be focused on power generation, which requires large investments. The first would be the 155 MW Song Bung 4 Hydropower Project, which is being prepared. The Government's strategy in power generation is to undertake large hydropower projects with storage (i.e., more than 100 MW) as public sector projects. Small hydropower projects are offered to domestic investors to be implemented as IPPs. The medium-size thermal power projects (i.e., less than 300 MW) are implemented as IPPs by domestic investors, mainly state-owned enterprises such as Vina Coal or joint ventures between EVN and other domestic enterprises. The Government is also keen to develop large thermal complexes with installed capacity of more than 1,500 MW as

---

<sup>1</sup> ADB. 2004. *Report and Recommendation of the President to the Board of Directors for a Proposed Loan to the Socialist Republic of Viet Nam for the Northern Power Transmission Sector Project*. Manila.

public–private partnerships. The power generation plants to be commissioned during 2005–2009 are committed and being implemented.

16. The candidate power generation projects for potential ADB financing during 2007–2010 are the projects earmarked for commissioning during 2011–2016 as part of the least-cost generation expansion plan of Viet Nam. These projects are summarized in Table A1.2.

**Table A1.2: Candidate Power Generation Projects**

| <b>Project</b>        | <b>Capacity<br/>(MW)</b> | <b>Region</b> | <b>Status</b>  |
|-----------------------|--------------------------|---------------|--|
| <b>A. Hydro</b>       |                          |               |  |
| 1. Dak My 4           | 210                      | Central       |  |
| 2. Upper Kno Tum      | 220                      | Central       |  |
| 3. Huoi Quang         | 560                      | North         |  |
| 4. Hua Na             | 195                      | North         |  |
| 5. Nam Chien          | 140                      | North         |  |
| 6. Se San 4           | 330                      | Central       |  |
| 7. Son La             | 2,400                    | North         | Preconstruction  |
| 8. Song Bung 4        | 155                      | Central       | Proposed ADB project   |
| 9. Ban Uon            | 250                      | North         | Proposed World Bank project                                  |
| 10. Dong Nai 2 and 5  | 250                      | South         |  |
| 11. Lai Chau          | 500                      | North         |  |
| <b>Subtotal (A)</b>   | <b>5,210</b>             |               |  |
| <b>B. Coal</b>        |                          |               |  |
| 1. Quang Ninh 3 and 4 | 600                      | North         | Quang Ninh 1 and 2 are under construction.                   |
| 2. Nghe Son           | 600                      | North         | Candidate for public–private partnership                     |
| 3. Mong Dung          | 2,000                    | North         | Proposed ADB project for first unit (500 MW) of the complex. |
| <b>Subtotal (B)</b>   | <b>3,200</b>             |               |  |
| <b>C. Natural Gas</b> |                          |               |  |
| 1. Nhon Trach         | 1,200                    | South         | Candidate for public–private partnership                     |
| 2. O Mon 2 and 3      | 1,100                    | South         | Potential project for PSOD                                   |
| <b>Subtotal (C)</b>   | <b>2,300</b>             |               |  |
| <b>Total</b>          | <b>10,710</b>            |               |  |

ADB = Asian Development Bank, MW = megawatt, PSOD = Private Sector Operations Department.  
Source: Institute of Energy, Viet Nam.

17. The investment loans to be financed with OCR must be coupled with policy dialogue to improve the social and environmental sustainability of Viet Nam's power generation expansion program. These will be addressed through targeted TAs to sector entities, as well as to national and provincial enforcement agencies, to improve the capacity to deal with adverse impacts of some of these power generation projects. Direct ADB financing of renewable energy projects might not be feasible due to small size of these projects. However, ADB might promote a policy framework for renewable energy and energy efficiency, and access to clean development mechanisms through ADB's Renewable Energy and Climate Change program.

## EXTERNAL ASSISTANCE TO THE POWER SUBSECTOR

| Project  | Funding Source | Amount (million) | Year      |
|--|----------------|------------------|-----------|
| <b>Loan</b>  |                |                  |           |
| Saigon Power Project   | ADB            | \$6.30           | 1972      |
| Power Distribution and Rehabilitation Project                                  | ADB            | \$80.00          | 1995      |
| Central and Southern Viet Nam Power Distribution Project                       | ADB            | \$100.00         | 1997      |
| Northern Power Transmission Project  | ADB            | \$120.00         | 2004      |
| Rural electrification Project  | AFD            | €19.00           | 2000      |
| Northern Power Transmission Project  | AFD            | €40.00           | 2004      |
| Phu My Thermal Power Plant Project   | JBIC           | ¥61,932.00       | 1993–1998 |
| Pha Lai Thermal Power Plant Project  | JBIC           | ¥72,826.00       | 1993–1998 |
| Ham Thuan–Da Mi Hydropower Project   | JBIC           | ¥53,074.00       | 1993–1997 |
| Da Nhim Power System Rehabilitation Project                                    | JBIC           | ¥7,000.00        | 1996      |
| O Mon Thermal Power Plant and Mekong Delta Transmission Network Project (I)    | JBIC           | ¥5,900.00        | 2001      |
| Dai Ninh Hydropower Project  | JBIC           | ¥10,000.00       | 2001      |
| Phu My–Ho Chi Minh City 500 kV Transmission Line Project                       | JBIC           | ¥13,127.00       | 2001      |
| O Mon Thermal Power Plant and Mekong Delta Transmission Network Project (II)   | JBIC           | ¥15,594.00       | 2002      |
| O Mon Thermal Power Plant and Mekong Delta Transmission Network Project (III)  | JBIC           | ¥21,689.00       | 2003      |
| Power Sector Loan  | JBIC           | ¥3,190.00        | 2004      |
| O Mon Thermal Power Plant Unit 2 Construction Project                          | JBIC           | ¥27,547.00       | 2004      |
| Dai Ninh Hydropower Project (III)  | JBIC           | ¥19,142.00       | 2004      |
| Thac Mo Hydropower Station Extension Project                                   | JBIC           | ¥5,972.00        | 2004      |
| Power Sector Rehabilitation and Expansion Project                              | WB             | \$165.00         | 1995      |
| Power Development Project  | WB             | \$180.00         | 1996      |
| Transmission, Distribution and Disaster Reconstruction                         | WB             | \$199.00         | 1998      |
| Rural Energy Project   | WB             | \$150.00         | 2000      |
| System Energy, Equitization and Renewable Energy Project                       | WB             | \$225.00         | 2002      |
| Second Rural Energy Project  | WB             | \$220.00         | 2004      |
| Second Transmission and Distribution   | WB             | \$200.00         | 2005      |
| Construction of Song Hinh Multipurpose Hydropower plant                        | Sida           | Skr13.00         | 1995      |
| Ha Tinh 500 kV transformer   | Sida           | Skr55.00         | 1998      |
| Power Distribution Project in Central Area                                     | Sida           | Skr60.00         | 1999      |
| Upgrading rural transformer substations  | Sida           | Skr60.00         | 2000      |
| Institutional Strengthening of the State Planning Committee in Energy Planning | ADB            | \$0.50           | 1994      |
| Review of Hydrocarbon Sector Policy  | ADB            | \$0.29           | 1995      |
| Improvement of Financial Management Power Companies Part A: National Tariff    | ADB            | \$0.70           | 1995      |
| Part B: Improvement of Financial Accounting Systems                            | ADB            | \$0.50           | 1995      |
| Training in Distribution Planning  | ADB            | \$0.25           | 1995      |
| Central and Southern Viet Nam Power Distribution Project                       | ADB            | \$0.51           | 1995      |
| Improvement of the Power Sector Regulatory Framework                           | ADB            | \$0.80           | 1997      |
| Commercialization of Power Companies   | ADB            | \$0.90           | 1997      |
| Energy Sector Profile Study  | ADB            | \$0.15           | 1998      |
| Project Preparation and Implementation Assistance to Phu-My 2                  | ADB            | \$0.05           | 1999      |
| Preparing the Se San Hydropower Project  | ADB            | \$1.00           | 1999      |
| Roadmap for Power Sector Reform  | ADB            | \$0.40           | 2001      |
| Northern Power Transmission Sector Project                                     | ADB            | \$1.00           | 2002      |
| Northern Power Transmission Expansion Sector Project                           | ADB            | \$0.50           | 2004      |
| Preparation of Song Bung 4 Hydropower Project, Phase 1                         | ADB            | \$0.15           | 2004      |
| Power Market Design  | ADB            | \$0.50           | 2005      |
| Preparation of Song Bung 4 Hydropower Project, Phase 2                         | ADB            | \$1.58           | 2005      |

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

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

## FINANCIAL PERFORMANCE AND PROJECTIONS OF ELECTRICITY OF VIET NAM

### A. Introduction

1. Since being established in 1995 as a vertically integrated entity responsible for the electricity sector in Viet Nam, Electricity of Viet Nam (EVN) has been profitable. EVN has financed the rapid expansion of the Viet Nam's electricity sector without significant fiscal subsidies. The key financial performance indicators, such as debt service cover ratio, self-financing ratio, and receivables, have been maintained at prudential limits. Meanwhile, the average end-user tariff has been maintained at around D794/kilowatt-hour (kWh) (\$0.051/kWh). Although the average tariff level is less than the estimated long-run marginal cost (LRMC) of D1,142/kWh (\$0.071/kWh), the prevailing tariffs are adequate to maintain the financial viability of the sector. However, to satisfy future demand resulting from rapid economic growth, EVN will need to make considerable investments in generation, transmission, and distribution. As a substantial portion of these investments will be debt financed, sustained tariff increases are required to maintain adequate levels of debt service and self-financing of new investments.

### B. Historical Performance

2. EVN's electricity sales (Table A3.1) doubled between 1999 and 2004, representing an annual growth rate of 15.2%. Although the average tariffs, net of sales taxes, increased only marginally from D660/kWh (\$0.0475/kWh) in 1999 to D794/kWh (\$0.051/kWh) by 2004, the cash flow from operating activities rose from D5,882 billion (\$427 million) to D13,454 billion (\$857 million) in that same period. Further, EVN's net profit reached D3,576 billion (\$227 million) in 2004, compared with D1,088 billion (\$79 million) in 1999. EVN's cumulative financial performance during 1999–2004 and the key financial ratios are summarized in Table A3.1.

**Table A3.1: Financial Performance of EVN 1999–2004**  
(D billion)

| Item                           | 1999   | 2000   | 2001   | 2002   | 2003   | 2004   |
|--------------------------------|--------|--------|--------|--------|--------|--------|
| Total Revenue                  | 14,124 | 16,513 | 19,209 | 23,566 | 30,245 | 34,530 |
| Revenue From Electricity Sales | 12,934 | 15,135 | 17,540 | 21,474 | 27,480 | 31,504 |
| Electricity Sales (GWh)        | 19,592 | 22,405 | 25,752 | 30,228 | 34,841 | 39,200 |
| Average Tariff D/kWh           | 660    | 675    | 681    | 710    | 789    | 794    |
| Profit Before Interest and Tax | 2,618  | 2,100  | 2,127  | 3,110  | 2,881  | 4,942  |
| Net Profit                     | 1,088  | 883    | 999    | 1,650  | 1,828  | 3,331  |
| Cash Flow From Operations      | 5,882  | 7,311  | 6,739  | 8,412  | 10,904 | 10,654 |
| New Borrowings                 | 6,201  | 8,866  | 6,131  | 6,507  | 6,337  | 8,185  |
| Net Capital Injections         | (287)  | 371    | 518    | 174    | 31     | (40)   |
| Investments                    | 11,666 | 13,697 | 9,218  | 9,923  | 13,347 | 16,298 |
| Debt Service                   | 1,254  | 2,036  | 3,811  | 2,823  | 2,719  | 4,503  |
| Self-Financing Ratio           | 22.7%  | 32.9%  | 36.0%  | 60.4%  | 83.4%  | 37.9%  |
| Debt Service Coverage Ratio    | 4.8    | 3.0    | 1.8    | 3.5    | 5.7    | 3.1    |
| Debt-Equity Ratio              | 41:59  | 47:53  | 50:50  | 50:50  | 53:47  | 55:45  |

EVN = Electricity of Viet Nam, GWh = gigawatt hour, kWh = kilowatt hour.

Source: Electricity of Viet Nam.

3. During 1999–2004, EVN's cumulative capital investments totaled D74.1 trillion (\$4.9 billion), and its debt service was D17.1 trillion (\$1.1 billion). These investments were financed through cash flows from operations, totaling D49.9 trillion (\$3.3 billion); borrowings of D42.2 trillion (\$2.8 billion); and capital injections of D1.3 trillion (\$90 million). The heavier borrowing

increased EVN's debt-equity ratio from 41:59 in 1999 to 55:45 in 2004, and reduced the debt service cover ratio from 4.8 to 3.1. Still, with its strong growth in future cash flows and low initial gearing, EVN retains the capacity to absorb further borrowings to finance its investments.

### **C. Historical Covenant Compliance**

4. In the two recent ADB loans to EVN (Loans 1358-VIE and 1585-VIE),<sup>1</sup> EVN committed that three of its power distribution companies (PC1, PC2, and PC3) would maintain certain financial ratios to ensure the sustainability of ADB's investments. These included a minimum self-financing ratio (SFR) of 30%, a debt service coverage ratio (DSCR) of 1.5, and a rate of return (ROR) on net fixed assets of 12%. In addition, EVN committed to ADB to (i) increase its average retail tariffs in phases, reaching the equivalent of \$0.07/kWh by 1999; (ii) maintain the ratio of the average residential tariff to the average retail tariff; and (iii) maintain the bulk tariffs that EVN charges the PCs, and not allow them to decline as a percentage of retail tariffs. While the PCs generally complied with the SFR and DSCR ratios, they regularly fell short on the ROR covenant. As the PCs were generally profitable, although below the 12% threshold, this covenant was not enforced strictly.

5. EVN generally complied with the covenants on the average level of residential tariffs and bulk tariffs compared with average retail tariffs. However, EVN was unable to get Government approval to raise its average retail tariffs to \$0.07/kWh level, as EVN had been complying with the financial ratio covenants. In 2001, the World Bank, ADB, and the Government met and agreed on a new schedule of tariff increases to raise retail tariffs to \$0.07/kWh by July 2005. While the first step of the tariff increases was implemented in October 2002 to improve the average tariff to D789/kWh (\$0.051/kWh), the schedule was not maintained after that.

6. For these reasons, World Bank, ADB, and the Government have agreed to move forward in implementing the new financial covenants based on EVN's consolidated results (not with the PCs); and EVN's overall financial viability and performance, rather than arbitrarily setting tariff levels in foreign currency. The covenants included in the recently approved Loan VIE - 2128<sup>2</sup> are (i) self-financing ratio of 25%, (ii) debt service ratio of 1.5, and (iii) debt-equity ratio of 70:30. EVN has complied with these ratios for 2004, as shown in Table A3.1.

### **D. Financial Projections (2004–2010)**

#### **1. Sales Growth**

7. Although EVN's corporate structure is envisaged to change under the proposed power reforms, EVN is likely to remain a holding company with significant ownership of the operating subsidiaries. Electricity sales are assumed to reach 88–99 terawatt-hours (TWh) in 2010, compared with 39.2 TWh in 2004. That represents an annual growth rate of 15%–16% during 2005–2010. The energy losses are expected to be maintained around the current levels of

<sup>1</sup> ADB. 1995. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Socialist Republic of Viet Nam for the Power Distribution and Rehabilitation Project*. Manila (Loan 1358-VIE, for \$80 million, approved on 8 June 1995); and ADB. 1997. *Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Socialist Republic of Viet Nam for the Central and Southern Viet Nam Power Distribution Project* (Loan 1585-VIE, for \$100 million, approved on 27 November 1997).

<sup>2</sup> ADB. 2004. *Report and Recommendation of the President to the Board of Directors for the Proposed Loan to the Socialist Republic of Viet Nam for the Northern Power Transmission Sector Project*. Manila.

12%–13%. EVN also is expected to purchase 35 TWh from third parties (i.e., private power producers and joint venture companies) out of the total generation of 100–112 TWh in 2010.

8. The aggregate financial projections of EVN and key financial ratios for 2005–2010 are shown in Table A3.2. These projections do not capture the cost of power shortages (i.e., loss of sales and use of expensive emergency measures to meet the demand) from May to July 2005 in northern Viet Nam. As a result, the actual financial performance of EVN in 2005 might turn out to be worse than the projected figures. The shortages are expected to continue in 2006 and 2007 due to higher-than-expected growth in demand, as well as delays in commissioning power plants now under construction.

**Table A3.2: Financial Performance of EVN 2005–2010**  
(D billion)

| Item                           | 2005   | 2006   | 2007   | 2008   | 2009   | 2010   |
|--------------------------------|--------|--------|--------|--------|--------|--------|
| Total Revenue                  | 40,913 | 46,524 | 58,290 | 66,189 | 75,058 | 85,103 |
| Revenue From Electricity Sales | 37,243 | 42,346 | 53,106 | 60,294 | 68,361 | 77,493 |
| Electricity Sales GWh          | 45,944 | 51,568 | 57,864 | 64,831 | 72,564 | 81,201 |
| Average Tariff D/kWh           | 811    | 821    | 918    | 930    | 942    | 954    |
| Profit Before Interest and Tax | 4,582  | 6,939  | 10,719 | 12,071 | 14,534 | 9,465  |
| Net Profit                     | 1,956  | 3,441  | 5,547  | 6,028  | 6,538  | 2,458  |
| Cash flow From Operations      | 14,193 | 17,991 | 22,335 | 26,840 | 31,784 | 31,363 |
| New Borrowings                 | 17,680 | 21,840 | 31,313 | 36,676 | 39,016 | 42,053 |
| Capital Injections             | 831    | 1,072  | 1,427  | 1,317  | 960    | 1,026  |
| Investments                    | 30,455 | 37,258 | 45,010 | 44,587 | 45,291 | 49,662 |
| Debt Service                   | 5,263  | 6,923  | 9,914  | 12,772 | 18,036 | 22,084 |
| Equitization Proceeds          |        | 2,297  | 1,629  | 2,369  | 2,426  |        |
| Self-Financing Ratio           | 32.0%  | 32.2%  | 34.5%  | 32.8%  | 33.3%  | 36.4%  |
| Debt Service Cover Ratio       | 2.9    | 2.8    | 2.5    | 2.1    | 1.8    | 1.6    |
| Debt-Equity Ratio              | 60:40  | 63:37  | 66:34  | 69:31  | 70:30  | 73:27  |

EVN = Electricity of Viet Nam, GWh = gigawatt-hour, kWh = kilowatt-hour.

Source: Electricity of Viet Nam.

## 2. Tariffs

9. The financial projections assume that EVN's average tariff would increase to ensure compliance with the financial covenants (para. 6). This would be 1.3% per year due to the change in the consumer mix (i.e., increase in the share of consumption by commercial and industrial consumers at the expense of residential consumers). This assumption is based on the demand forecast for different consumer categories, and higher industrial and commercial tariffs relative to residential tariffs. The Government also is assumed to approve an average tariff increase of 10.5% (i.e., in addition to the increase in average tariff due to shift in the consumer mix) in 2006 to meet minimum debt service coverage and self-financing ratios.<sup>3</sup> This would result in an average tariff of D918/kWh (\$0.056/kWh) by 2007, compared with D794/kWh (\$0.051/kWh) in 2004. Given the rapid demand growth, and the investment required to maintain the growth momentum of the economy, the Government has indicated that reasonable tariff increases will be allowed during 2005–2010.

<sup>3</sup> In light of the power shortages in early 2005, the Government has asked EVN to submit a tariff increase schedule in early 2006 for consideration.

10. EVN does not receive any explicit financial fiscal subsidies from the Government. The coal prices are administratively fixed by the government, and the financial projections were made based on coal prices staying at about \$22 per ton during 2005–2010. Although these prices are below international coal prices, EVN's uses poor quality coal that is not directly comparable with the international prices. The absence of data on the production cost of different types of coal, and the lack of transparency in Viet Nam's coal market, makes identifying any implicit subsidy to EVN through coal prices difficult.

### **3. Capital Expenditures**

11. EVN is to make cumulative capital investments totaling to D252 trillion (\$16 billion) during 2005–2010 period, compared with D74 trillion (\$4.9 billion) during 1999–2004—a threefold increase in capital investment. The debt service commitment during 2005–2010 will also increased to D75 trillion (\$4.5 billion), compared with D17 trillion (\$1.1 billion) in the previous 6-year period. In addition to the direct investments, EVN also is planning to form joint venture companies to implement some of the power generation projects in 2005–2010, and plans to invest D7.6 trillion (\$465.0 million) in these companies. These joint ventures also would mobilize debt financing of approximately D31,000 billion (\$2.0 billion). Investments mainly in power generation by non-EVN entities, including the private sector, would complement EVN's direct investments and investments through the joint ventures.

12. Although EVN's internal cash generation is projected to reach D144.5 trillion (\$8.6 billion) during 2005–2010, D188.6 trillion (\$11.2 billion) in borrowings would finance the bulk of the investments. This indicates significantly heavier borrowing compared with 1999–2004, when EVN borrowed D42.2 trillion (\$2.8 billion). Without significant equity injections, this investment plan would substantially increase EVN's debt and its debt service requirements. The debt-equity ratio would increase to 73:27 in 2010 from 55:45 in 2004, while the debt service requirements would rise to D22.1 trillion (\$1.4 billion) in 2010 from D4,503 trillion (\$285 million) in 2004. As a result, the DSCR would drop to 1.6 by 2010 from 3.1 in 2004. This trend reflects EVN's transition from a lightly geared utility, due to its lack of access to debt financing before 1995, to a more typical utility in a fast-growing economy.

13. The Government has approved the plan for EVN to equitize (i.e., partially privatize) minority stakes in some power generation plants. The proceeds from these sales are not included in the cash flow projections, and are not used in the computation of the SFR and DSCR ratios. As of June 2005, the 130 megawatt (MW) Vinh Son–Song Hinh hydropower plant, a provincial power distribution utility, and 15 noncore businesses had been equitized. By the end of 2006, seven power plants and 15 power distribution utilities are expected to be equitized. The liabilities of the equitized entities are transferred to the equitized entity, and the par value is computed net of the liabilities. The cash proceeds from the equitization will improve the cash flow-based financial ratio. However, the debt-equity ratio of EVN as a consolidated entity will not be affected as EVN intends to hold a majority stake in the equitized entities. The liabilities of new power plants to be developed as joint ventures between EVN and other parties are not consolidated in the financial projections (Table A3.2), as the ownership structures of these joint ventures have not been finalized.

### **4. Proposed Covenants**

14. Given the increasing indebtedness, a maximum long-term debt-equity ratio of 70:30 and a minimum DSCR of 1.5 are proposed as financial covenants to ensure EVN's debt level and its debt service capacity remains within prudential limits. Although the debt-equity position is

steadily increasing and DCSR is decreasing, they will remain within these limits during the forecast period, except in 2010 when debt-equity ratio will exceed 70:30. A minimum SFR of 25% also must be included to ensure that EVN is generating adequate cash flows to finance a reasonable portion of the capital investments to keep the company's leverage within prudential limits. These covenants were included in Loan 2128-VIE, approved in 2004, and EVN comfortably complied with them in 2004. However, in the absence of the 10% increase in average tariffs in 2006, EVN is unlikely to meet the covenant on a minimum SFR of 25%.

## **5. Conclusion**

15. Despite its ambitious capital expansion program and relatively low tariffs, EVN appears capable of maintaining its financial viability in the medium term with a modest tariff increase in 2006. The financial projections assume EVN will continue to purchase coal at \$22–\$25 per metric ton, and that natural gas prices will increase at 2% per year. Any moves to link natural gas prices to crude oil prices would affect the financial viability of the sector significantly. Financial performance covenants have been set on this basis to ensure financial viability, while also providing EVN with enough financial flexibility to adjust in the short term as necessary. As shown in Table A3.2, compliance with the financial covenants is projected over the forecast period. However, if revenue stops growing in line with these assumptions, or the subsidies on fuel prices are removed, further increases in retail tariffs will be required to maintain compliance with the covenants.

## DESIGN AND MONITORING FRAMEWORK

| Design Summary  | Performance Targets/Indicators  | Data Sources/Reporting Mechanisms   | Assumptions and Risks  |
|---|---|---|--|
| <p><b>Impact</b></p> <p>The livelihood of people in the northern Viet Nam has been improved in a sustainable manner</p>       | <p><b>5 years after project completion:</b></p> <ul style="list-style-type: none"> <li>• Average growth in the northern midland and mountainous area of 9%–10% in 2006–2010</li> <li>• Growth of industry and consumption in GDP by 10%</li> <li>• Per capita GDP to reach \$520 by 2010</li> <li>• Reduced poverty rate in northern upland region from about 43% in 2005 to about 28% in 2010</li> </ul>   | <p>Provincial and district statistics for socioeconomics in the northern region</p> <p>Survey reports by Ministry of Labor for northern Viet Nam</p> <p>Income and expenditure survey at districts and provinces of the northern region of Viet Nam</p> | <p><b>Assumptions</b></p> <ul style="list-style-type: none"> <li>• Tariff set for electricity is affordable, and financially and economically viable</li> <li>• The Government supports industrial development in the project areas</li> <li>• Local people have adequate skills to be absorbed by enterprises</li> </ul> <p><b>Risk</b></p> <ul style="list-style-type: none"> <li>• Failure of the economy to continue achieving economic growth rate by 7.5%</li> </ul> |
| <p><b>Outcome</b></p> <p>Households and the industries in northern Viet Nam have access to reliable supply of electricity</p> | <p><b>After Project completion:</b></p> <p>Northern region per capita consumption of electricity increased from 130 kWh in 2005 to 250 kWh in 2010</p> <p>Power outages reduced during dry season from 8 hours/day to 2 hours/day</p> <p>Transmission losses reduced from 14.7% in 2005 to 13.8% in 2010 and 11% in 2015.</p> <p>All people adversely affected by power projects are compensated adequately and receive available budget for improving their livelihoods and environmental services in a sustainable manner</p> | <p>Audited annual reports of the Electricity of Viet Nam</p> <p>Progress reports of the resettlement committees at provincial and district level</p>  | <p><b>Assumptions</b></p> <ul style="list-style-type: none"> <li>• The Government maintains existing and expands distribution lines to households and industries in the northern region</li> <li>• The Government releases adequate and timely funds for resettlement, livelihoods, and environmental services</li> </ul> <p><b>Risk</b></p> <ul style="list-style-type: none"> <li>• Son La and Huoi Quan hydropower projects are completed on schedule</li> </ul>        |
| <p><b>Outputs</b></p> <p>(i) Five transmission lines are fully</p>  | <p><b>After Project implementation</b></p> <p>Reliable performance of 744 km of additional transmission lines of the following five</p>   | <p>Quarterly and annual financial reports on project progress by</p>  | <p><b>Assumptions</b></p> <p><b>Assumption</b></p> <ul style="list-style-type: none"> <li>• Available counterpart funds for value-added</li> </ul>   |

| Design Summary  | Performance Targets/Indicators   | Data Sources/Reporting Mechanisms  | Assumptions and Risks  |
|---|--|--|--|
| operated  | subprojects:<br><br>For 500 kV for overhead lines: <ul style="list-style-type: none"> <li>• Son La–Hoa Binh–Nho Quan (287 km)</li> <li>• Son La–Soc Son (260 km)</li> <li>• Quang Ning–Mong Duong (25 km)</li> </ul>   | EVN and NPPMB  | taxes and duties for equipment and civil works<br><br><b>Risk</b> <ul style="list-style-type: none"> <li>• Entry barriers for private sector participation (domestic and foreign)</li> </ul>   |
| (ii) One new substation is fully functioned<br><br>(iii) Two existing substations are upgraded<br><br>(iv) The power system in the northern Viet Nam is environmentally and socially acceptable | For 220 kV overhead lines: <ul style="list-style-type: none"> <li>• Thanh Hoa–Nghì Son–Vinh (152 km)</li> <li>• Ha Tinh–Tach Khe (20 km)</li> </ul> Well-constructed new 500/220kV substation at Soc Son subproject with 900 MVA capacity<br><br>Supporting equipments have been installed for the following subprojects: <ul style="list-style-type: none"> <li>• 500/220kV transformer at Thuong Tin with the capacity increase from 450 MVA to 900 MVA</li> <li>• 220/110 kV transformer at Van Tri with the capacity increase from 250 MVA to 500 MVA</li> </ul> All project-affected households have been compensated, resettled, and rehabilitated according to approved and updated resettlement plans (RP) | Field visit report, inspection and monitoring reports<br><br>EVN annual report and audit report by public accounting firm<br><br>Project reports by Northern Power Project Management Board<br><br>Inspection reports to the project areas<br><br>Progress reports of the resettlement committees at provincial and district level<br><br>Semiannual reports on implementation of environmental management plans, and annual reviews of environmental aspects. | <b>Assumptions</b> <ul style="list-style-type: none"> <li>• The Government ensures that land acquisition and resettlement will be completed on time</li> <li>• The Government provides adequate funds for land acquisition, environmental, social services, and other mitigation measures in a timely manner</li> </ul> <b>Risk</b> <ul style="list-style-type: none"> <li>• Implementation delays of other transmission and generation projects</li> <li>• Incompatible equipments procured and installed in the existing substations.</li> </ul> |

| Activities with Milestones   | Inputs |
|--|--------|
| 1. Five transmission lines are fully operational <ol style="list-style-type: none"> <li>1.1. Appraise and prepare detailed feasibility study for the following transmission lines at Son La–Soc Son, Ha Tinh–Thach Khe, and Quan Ninh–Mong Duong by 2007</li> <li>1.2. Finalize procurement packages and bidding process (2006–2007)</li> <li>1.3. Construct transmission lines at Son La–Hoa Binh–Nho Quan (2007–2010)</li> <li>1.4. Construct transmission lines at Thach Hoa–Nghì Son–Vinh (2008–2010)</li> <li>1.5. Construct transmission lines at Ha Tinh–Thach Khe (2006–2008)</li> </ol> |        |

| Activities with Milestones   | Inputs   |
|--|--|
| 1.6. Construct transmission lines Son La–Soc Son (2007–2010)<br>1.7. Construct transmission lines Quan Ninh–Mong Duong (2008–2010)   |  |
| 2. One new substation is fully functioned<br>2.1. Appraise and prepare detailed feasibility study for substation at Soc Son by 2006<br>2.2. Finalize procurement packages and bidding process (2006–2007)<br>2.3. Construct 500 kV substation at Soc Son (2007–2010)<br><br>3. Two substations are upgraded<br>3.1. Appraise and prepare feasibility study for substation at Thuang Tinh by 2006<br>3.2. Finalize procurement packages and bidding process (2006–2007)<br>3.3. Install equipment at Thuong Tinh transformer (2007–2010)<br>3.4. Install equipment at Van Tri transformer (2007–2008)<br><br>4. The power system in the northern region is environmentally and socially acceptable<br>4.1. Conduct training for provincial and district institutions on delivery of socioeconomic support program<br>4.2. Train the project-affected people and community-based organizations in income-generating activities<br>4.3. Conduct awareness for STD/HIV/AIDS among contractors and local communities<br>4.4. Train and improve awareness of staff of implementing agency (NPPBM) and the executing agency (Electricity of Viet Nam) to comply with involuntary resettlement, indigenous people, and environmental safeguards<br>4.5. Capacity building training on leadership and awareness raising for men and women commune leaders, women from affected households, and leaders of the Women’s Union on Decree 80 and 79<br>4.3. Conduct awareness on community consultation process on resettlement activities<br>4.4. Gender sensitization training for relevant staff from EVN, NPPMB, provincial steering committees for resettlement and district resettlement and compensation, and management committees. | Project cost:<br>\$452.7 million, comprising of \$360 million from ADB, and \$92.7 million from EVN for financing equipment, civil works, resettlement, and social and environmental services as detailed in Appendix 7 and Supplementary Appendixes D and E |

AIDS = acquired immunodeficiency syndrome, EVN = Electricity of Viet Nam, HIV = human immunodeficiency virus, km = kilometer, kV = kilovolt, kWh = kilowatt-hour, MVA = megavolt-ampere, NPPMB = Northern Power Project Management Board, STD = sexually transmitted disease.

## CANDIDATE SUBPROJECTS

### A. Appraised Subprojects with Feasibility Studies Completed

#### 1. Son La–Hoa Binh–Nho Quan 500 kilovolt (kV) Transmission Line

1. This subproject is to construct a 500 kV double circuit overhead transmission line to evacuate power from the hydropower plants that are planned or under construction in the northwestern part of Viet Nam. This 500 kV transmission line will strengthen the transmission grid in the north, reduce system losses, and improve system security and operational flexibility. The main features of this work include

- (i) constructing a 500 kV double circuit overhead transmission line and associated composite optical fiber earth-wire;
- (ii) installing in the Hoa Binh 500 kV substation (a) 500 kV, 65-megavolt ampere reactive (MVA<sub>r</sub>) three-phase shunt reactor; (b) 500 kV, 15 ohm three-phase series capacitor; and (c) 500 kV switchgear;
- (iii) installing in the Nho Quan 500 kV substation (a) 500 kV 91 MVA<sub>r</sub> three-phase shunt reactor; (b) 500 kV 21.5 ohm 3-phase series capacitor; and (c) 500 kV switchgear; and
- (iv) installing new STM-16 telecommunications stations at (a) Son La 500 kV substation; (b) Hoa Binh 500 kV substation; and (c) intermediate towers close to Yen Chau, Moc Chau, and Phu Cuong.

#### 2. Thanh Hoa–Nghì Son–Vinh 220 kV Transmission Line.

2. The subproject is to accommodate the steadily increasing load on the existing 220 kV transmission line that connects these three substations. It is also required to connect the 600-megawatt (MW) Nghì Son thermal power station to the power grid. The subproject principally will provide a single circuit 220 kV transmission line, and construction of substation bays at each end, to connect the new transmission line to the power system.

#### 3. 220/110 kV Van Tri Substation

3. The subproject comprises the upgrading of the existing substation to supply one of the fastest-growing industrial and commercial areas in Viet Nam. The subproject principally will add a new 250 megawatt (MVA) transformer, and equip a bay on each of the 220 kV and 110 kV busbars to connect it to the power system.

### B. Candidate Subprojects Still To Be Appraised

4. The following are subprojects that will be appraised during implementation

- (i) Son La–Soc Son 500 kV transmission line
- (ii) Quang Ninh–Mong Duong 500 kV transmission line
- (iii) Ha Tinh–Thach Khe 220 kV transmission line
- (iv) Thuong Tin 500 kV substation
- (v) Soc Son 500 kV/220kV substation

## SUBPROJECT APPRAISAL REPORT FORMAT

1. Electricity of Viet Nam (EVN) will prepare an appraisal report for each subproject to be financed under the proposed loan, for review and approval of the Asian Development Bank (ADB). The appraisal report and application for approval should contain the following information and documents:

- (i) Objective, scope, and description of the subproject.
- (ii) Confirmation that the subproject is part of EVN's least-cost development plan, and identification of the subproject in the development plan.
- (iii) A feasibility study demonstrating that the subproject is technically the best alternative (subject to environmental and social concerns) for solution of the problem, among all reasonable alternatives.
- (iv) Screening for land acquisition and resettlement impacts, and impacts on ethnic minorities; complete screening forms (submitted to ADB); a resettlement action plan and an ethnic minority development plan for subproject appraisal, if screening indicates the need.
- (v) An initial environmental examination (IEE), and a summary IEE if the subproject is a category "B" sensitive.<sup>1</sup> The summary IEE will be made available to the public 120 days before subproject approval.
- (vi) Detailed route and/or location map and single line diagram.
- (vii) List of main components in each package and mode of procurement.
- (viii) Implementation schedule.
- (ix) Cost estimate subdivided into foreign exchange, local currency, and total costs, and as set out in Table A6.1.

**Table A6.1: Cost Estimate**

| Item                         | Foreign<br>Exchange | Local<br>Currency | Total<br>Costs |
|------------------------------|---------------------|-------------------|----------------|
| Base Cost                    |                     |                   |                |
| Physical Contingencies       |                     |                   |                |
| Price Contingencies          |                     |                   |                |
| Interest During Construction |                     |                   |                |
| <b>Total</b>                 |                     |                   |                |
| Funding Plan                 |                     |                   |                |
| ADB                          |                     |                   |                |
| EVN                          |                     |                   |                |
| Other                        |                     |                   |                |

ADB = Asian Development Bank, EVN = Electricity of Viet Nam.  
Source: EVN estimates.

<sup>1</sup> Category B: Projects are categorized as "B" if they could have some adverse environmental impacts, but of lesser degree or significance than those for category A projects. An initial environmental examination (IEE) is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.

**COST ESTIMATES OF THE CANDIDATE SUBPROJECTS**  
(\$ million)

| Item                                    | Foreign<br>Cost | Local<br>Cost | Total        |
|---|-----------------|---------------|--------------|
| <b>A. Overhead Transmission Lines</b>   |                 |               |              |
| 1. Son La–Hoa Binh–Nho Quan 500 kV OHL  | 59.8            | 55.5          | 115.3        |
| 2. Thanh Hoa–Nghì Son–Vinh 220 kV OHL   | 6.3             | 12.6          | 18.9         |
| 3. Additional Subprojects               | 59.0            | 70.9          | 129.9        |
| <b>Subtotal<sup>a</sup></b>             | <b>125.1</b>    | <b>139.0</b>  | <b>264.1</b> |
| Land Acquisition and Resettlement       | 0.0             | 13.9          | 13.9         |
| Administration and Consultancy Services | 0.1             | 14.2          | 14.3         |
| <b>Part A Base Cost</b>                 | <b>125.2</b>    | <b>167.1</b>  | <b>292.3</b> |
| <b>B. Substations</b>                   |                 |               |              |
| 1. Van Tri 220 kV Transformer           | 1.9             | 0.3           | 2.2          |
| 2. Additional Subprojects               | 45.2            | 10.0          | 55.2         |
| <b>Subtotal<sup>a</sup></b>             | <b>47.1</b>     | <b>10.3</b>   | <b>57.4</b>  |
| Land Acquisition and Resettlement       | 0.0             | 1.1           | 1.1          |
| Administration and Consultancy Services | 0.1             | 1.9           | 2.0          |
| <b>Part B Base Cost</b>                 | <b>47.2</b>     | <b>13.3</b>   | <b>60.5</b>  |
| <b>Total Base Cost<sup>a</sup></b>      | <b>172.4</b>    | <b>180.4</b>  | <b>352.8</b> |
| <b>C. Contingencies</b>                 |                 |               |              |
| Physical Contingencies <sup>b</sup>     | 9.7             | 12.3          | 22.0         |
| Price Contingencies <sup>c</sup>        | 12.8            | 33.8          | 46.6         |
| <b>Total Contingencies</b>              | <b>22.5</b>     | <b>46.1</b>   | <b>68.6</b>  |
| <b>D. Financing Charges</b>             |                 |               |              |
| IDC (ADB Loan)                          | 26.1            | 0.0           | 26.1         |
| Commitment Charges                      | 5.2             | 0.0           | 5.2          |
| <b>Total Financing Charges</b>          | <b>31.3</b>     | <b>0.0</b>    | <b>31.3</b>  |
| <b>Total Project Cost</b>               | <b>226.2</b>    | <b>226.5</b>  | <b>452.7</b> |

ADB = Asian Development Bank, IDC = interest during construction, kV = kilovolt, OHL = overhead transmission line.

<sup>a</sup> Includes taxes and duties.

<sup>b</sup> Physical contingencies (%): 5%.

<sup>c</sup> Price Contingencies (%):

|         |      |      |      |      |      |
|---------|------|------|------|------|------|
|         | 2006 | 2007 | 2008 | 2009 | 2010 |
| Local   | 6    | 6    | 6    | 6    | 6    |
| Foreign | 2.8  | 1.9  | 1.9  | 1.9  | 1.9  |

Note: Taxes and duties are estimated at \$50.33 million.

Sources: Electricity of Viet Nam and ADB estimates.

## IMPLEMENTATION SCHEDULE

| ID  | Task  | 2005 |    | 2006 |    |    |    | 2007 |    |    |    | 2008 |    |    |    | 2009 |    |    |    | 2010 |    |    |    | 2011 |    |
|-----|---|------|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|
|     |   | Q3   | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 | Q3 | Q4 | Q1   | Q2 |
| 1.  | Loan Approval   |      | ◆  |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 2.  | Loan Effectiveness  |      |    |      | ◆  |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 3.  | Recruit Consultants—Independent Monitoring and Resettlement Supervision | ◆    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 4.  | Detailed Designs  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 5.  | RAP Prepared, Updated, Approved, Implemented                            | ■    |    | ■    |    |    |    | ■    |    |    |    | ■    |    |    |    | ■    |    |    |    | ■    |    |    |    | ■    |    |
| 6.  | Resettlement Monitoring   |      |    | ■    |    |    |    | ■    |    |    |    | ■    |    |    |    | ■    |    |    |    | ■    |    |    |    |      |    |
| 7.  | Preparation of Bid Documents  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 8.  | Review by EVN, ADB  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 9.  | Tenders Issued  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 10. | Tendering Period  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 11. | Bid Evaluation by EVN   |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 12. | Bank Approval   |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 13. | Contract Negotiation  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 14. | EVN Approval  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 15. | Contracts Awarded   |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 16. | Manufacturing and Shipping  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 17. | First Delivery to EVN   |      |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 18. | Preparation of Bid Documents for Local Civil Works                      |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 19. | Bidding and Negotiations  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 20. | Contract Award for Local Contracts                                      |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 21. | Implementation and Tests Commissioning                                  |      |    | ■    |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 22. | Completion of Installation  |      |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |
| 23. | Loan Closing Date   |      |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |    |    |      |    |

ADB = Asian Development Bank, EVN = Electricity of Viet Nam, Q1 = first quarter, Q2 = second quarter, Q3 = third quarter, Q4 = fourth quarter, RAP = resettlement action plan.

Source: Asian Development Bank estimates.

**TENTATIVE LIST OF CONTRACT PACKAGES  
FOR APPRAISED SUBPROJECTS**

| Package Number                                     | Item   | Aggregated Contract Value <sup>a</sup><br>(\$) | Procurement Mode | Source of Financing | No. of Packages |
|--|--|--|------------------|---------------------|-----------------|
| <b>Part A: Upgrade of 500 kV and 200 kV system</b> |  |  |                  |                     |                 |
| 1.   | Civil Equipment Foundation                                 | 7,740,680                                      | ICB/LCB          | ADB                 | 3 (1/2)         |
| 2.   | Civil Tower Foundation                                     | 55,921,693                                     | ICB/LCB          | ADB                 | 11 (7/4)        |
| 3.   | Switchgear 500kV/220 kV                                    | 6,487,788                                      | ICB              | ADB                 | 1               |
| 4.   | Transformer and Reactor                                    | 5,873,966                                      | ICB              | ADB                 | 1               |
| 5.   | Switchgear 500kV Hoa Binh<br>Second Equipment 500 kV       | 7,362,098                                      | ICB              | ADB                 | 1               |
| 6.   | Telecoms SL_HB_NQ OHL                                      | 2,198,378                                      | ICB/LCB          | ADB                 | 1               |
| 7.   | OHL Tower Steel  | 25,438,674                                     | ICB              | ADB                 | 8               |
| 8.   | OHL Conductors   | 16,389,172                                     | ICB              | ADB                 | 4               |
| 9.   | OHL OPGW   | 1,905,029                                      | ICB/LCB          | ADB                 | 1               |
| 10.  | OHL Insulators and Fittings                                | 9,628,676                                      | ICB              | ADB                 | 2               |
|  | <b>Subtotal (A)</b>  | <b>138,946,154</b>                             |                  |                     |                 |
| <b>Part B. Substations</b>                         |  |  |                  |                     |                 |
| 1.   | Civil Works  | 201,515  | LCB              | ADB                 | 1               |
| 2.   | Transformers 220 kV Van Tri                                | 1,561,603                                      | ICB/LCB          | ADB                 | 1               |
| 3.   | Primary Switchgear 220 kV                                  | 343,529  | ICB/LCB          | ADB                 | 1               |
| 4.   | Computerized Substation<br>Control Protection<br>Equipment | 173,380  | IS/DP            | ADB                 | 1               |
| 5.   | Computerized Secondary<br>Equipment 500 kV                 | 424,982  | IS/DP            | ADB                 | 1               |
|  | <b>Subtotal (B)</b>  | <b>2,705,009</b>                               |                  |                     |                 |
|  | <b>Total</b>   | <b>141,651,163</b>                             |                  |                     |                 |

ADB = Asian Development Bank, DP = direct purchase, IS = international shopping, HB = Hoa Binh, ICB = international competitive bidding, LCB = local competitive bidding, kV = kilovolt, NQ = Nho Quan, OHL = overhead transmission line, SL = Son La.

<sup>a</sup> Excluding taxes and duties.

<sup>b</sup> In several packages.

Sources: Electricity of Viet Nam and ADB estimates.

## OUTLINE TERMS OF REFERENCE OF CONSULTANTS

### A. International Consultants

#### 1. Resettlement Specialist (8 person-months)

1. The consultant will assist the Northern Power Project Management Board (NPPMB) and Compensation and Resettlement Board (CARB) in the preparation, implementation, and monitoring of resettlement plans (RP). Among other activities, the consultant will:

- (i) Prepare and update resettlement plans according to the approved resettlement framework, Asian Development Bank's (ADB's) Policy on Involuntary Resettlement, and Operations Manual F2 (issued October 2003) after completion of the feasibility study for appraisal and detailed design for transmission lines and substations. Preparation of RPs shall be based on a full census and inventory of losses and detailed measurement survey of lost assets, baseline socioeconomic and perception survey of at least 10% of the marginally affected and 20% the severely affected peoples (APs), and derive updated compensation unit rates for all categories of losses and allowances. An updated RP might include revisions to the entitlement matrix, provided that the revisions are limited to (a) inclusion of new entitlements to address impacts not recognized previously, or (b) changes of mode of payment from cash to in-kind. A reduction in the monetary value of any allowance will not be allowed, regardless of whether payment is made in cash or in-kind.
- (ii) Design and implement information campaigns and consultation program. The consultant will disclose the RPs to affected communities and general public in a form and language they can understand, and in an easily accessible place, before submission to ADB for review and approval. This can be in the form of a public information booklet, a summary resettlement plan, or a complete resettlement plan. The booklet or summary resettlement plan will state clearly that copies of complete RPs (in English and Vietnamese) are available to the public, and can be obtained from the commune, district, and provincial offices.
- (iii) Design and implement detailed socioeconomic support programs for severely affected people. The consultant will ensure that vulnerable groups are provided appropriate assistance socioeconomic programs that will improve their socioeconomic status. The groups would include any people who might suffer disproportionately or face the risk of being marginalized from the effects of resettlement, i.e.; (a) female-headed households with dependents; (b) disabled household heads; (c) poor households; (d) landless elderly households with no means of support; (e) households without security of tenure; and (f) ethnic minorities living in remote, isolated areas, or in communes with special difficulties, as classified under Program 135.<sup>1</sup>
- (iv) Establish and implement liaison mechanisms to ensure proper technical and logistical support to NPPMB and CARBs, as well as procedures for a centralized resettlement and social management information system and internal monitoring.

---

<sup>1</sup> Program 135 is a Government program established in 1998 as a 7-year program of socioeconomic development to focus on providing essential basic infrastructure to poor communes in mountainous and remote areas. These communes, with high populations of ethnic minorities, are considered to have "special difficulties". The Committee for Ethnic Minorities in Mountainous Areas is responsible for identifying eligible communes.

- (v) Carry out formal and on-the-job training on resettlement, ethnic minorities development, social preparation, social impact assessment, and gender and social development.
- (vi) Carry out formal and on-the-job training on consultation and grievance mechanism strategies to CARBs and mass organizations, so they will be able to provide correct and clear information and culturally appropriate support to affected persons.
- (vii) Assist in the implementation of all resettlement activities and supervise external monitoring agency activities, and ensure that the terms of references are properly and effectively achieved.

**2. Environmental Specialist (2 person-months)**

2. During implementation of the Project, a team of environmental specialists (international and domestic) will assist the NPPMB. Among other tasks, the international environmental specialist will:

- (i) Conduct quarterly supervisory site visits, and random spot-checks on the contractor's environmental performance against the initial environment examination (IEE) and environment management plan (EMP), accompanied by Electricity of Viet Nam (EVN) and NPPMB's environmental staff as needed.
- (ii) Supervise collection of environmental samples (water, soil, air, and wildlife), and make observations (noise and dust) as relevant; and work with a certified local laboratory to test the samples and obtain relevant data for the environmental components, if deemed necessary.
- (iii) Produce quarterly and semiannual reports on EMP implementation based on monthly supervisory reports, with supporting data and information from domestic sources and site visits information; and submit to EVN and NPPMB and ADB for review.
- (iv) Assist NPPMB in the review of the IEE for future subprojects that would be prepared by EVN and NPPMB's consultant; and after review, submit them for ADB review.
- (v) Supervise the local public consultation workshops and related activities as part of the IEE processes in the provinces on behalf of NPPMB.
- (vi) Coordinate closely with Ministry of Natural Resources and Environment (MONRE) and Department of Natural Resources and Environment (DONRE) in ensuring the environmental mitigation and monitoring information is communicated to them on time, and their requests are complied with for improvement and correction; and in ensuring that the IEEs are prepared properly for future subprojects, and be forwarded to MONRE and DONRE for review.
- (vii) Conduct training workshops and/or on-the-job training for staff of NPPMB/EVN and contractors on (a) environmental and wildlife laws and regulations, (b) environmental awareness for engineering projects, and (c) environmentally sound site management.

**B. Domestic Consultants**

**1. Social Development and Gender Specialist (7 person-months)**

3. The consultant will be recruited to assist EVN to implement the gender strategy included in the Summary of Poverty Reduction and Social Strategy during the project implementation. Among other activities, the consultant will:

- (i) Assist EVN in implementing the gender strategy (Summary Poverty Reduction and Social Strategy, in RRP, Appendix 13) into a detailed action plan.
- (ii) Train EVN, NPPMB, and members of the provincial resettlement steering committee and district resettlement compensation management committee on the village and commune level consultation process and gender sensitization training for preparation and implementation of resettlement plan.
- (iii) Develop capacity building training modules on (a) the commune- and village-level consultation process for resettlement and compensation activities; (b) leadership skills; and (c) information on Decree 79 (Grassroots Democracy) and Decree 80 (Regulation for Participatory Investment Supervision), and use of the decrees for community participation and monitoring.
- (iv) Conduct training of trainers (TOT) on capacity building training for selected women leaders from province, district, and commune levels to conduct capacity building training for the commune leaders and affected households.
- (v) Prepare capacity building training plan for the affected households, women and men commune leaders, and leaders of mass organizations to raise awareness on resettlement activities; and build their leadership capacity for grassroots monitoring of resettlement activities (Decree 79) to ensure their participation in commune investment supervisory groups (Decree 80).
- (vi) Ensure that women headed households, women from the affected households, and from the ethnic minority households have access to the socioeconomic support program of the resettlement plan.
- (vii) Ensure joint registration of land use rights in the names of husband and wife in instances where households are allocated to alternative agriculture and/or residential land.
- (viii) Establish appropriate mechanisms for consultation and grievance processes for women from affected households.
- (ix) Ensure that an HIV/AIDS<sup>2</sup> and trafficking awareness campaign involve women's union, youth union, health workers, and women community leaders.
- (x) Ensure that men and women get paid equally for construction work of equal value.
- (xi) Develop disaggregated monitoring indicators by gender and ethnic groups.
- (xii) Conduct periodic field visits and prepare report on the implementation of gender and social issues.

## **2. Environmental Specialist (7 person-months)**

4. The domestic environmental specialist(s), as team member(s), will assist and support the international consultant (team leader). Among other activities, the consultants will:

- (i) Conduct monthly supervisory site visits, and assist the team leader in conducting quarterly site visits and spot-checks on the contractor's environmental performance against the IEE and EMP.

---

<sup>2</sup> Human immunodeficiency virus/acquired immunodeficiency syndrome.

- (ii) Collect samples and make observation on environmental components, as relevant, under the supervision of the team leader; and work with a certified local laboratory to test the samples and obtain relevant data for the environmental components, if deemed necessary.
- (iii) Assist in producing quarterly and semiannual reports on implementation of EMP based on monthly supervisory reports, and submit them to EVN and NPPMB and ADB for review.
- (iv) Assist NPPMB in the review of the IEEs for future subprojects prepared by the EVN and NPPMB's consultant; and after the review, submit them for ADB review.
- (v) Assist and facilitate local public consultation workshops and related activities as part of the IEEs processes in the provinces on behalf of NPPMB.
- (vi) Coordinate closely with MONRE and DONRE in ensuring the environmental mitigation and monitoring information is communicated to them on time, and their requests are complied with for improvement and correction; and in ensuring that the IEEs are prepared properly for future subprojects, and are forwarded to the MONRE and DONRE for review.
- (vii) Assist and facilitate training workshops and/or on-the-job training, led by the team leader, on (a) environmental and wildlife laws and regulations, (b) environmental awareness for engineering projects, and (c) environmentally sound site management.
- (viii) Prepare and assist in data collection and agencies coordination for the team leader in completing the tasks for the environmental team.

## ECONOMIC AND FINANCIAL ANALYSES

### A. Macroeconomic and Sector Context

1. Viet Nam has been one of the world's fastest-growing economies during the past 5 years. Supported by buoyant consumption and investment, economic growth remained rapid rate in 2004, reaching 7.5%. Industry and services accounted for nearly 80% of gross domestic product (GDP), and were the main sources of growth. These two sectors grew 10.2% and 7.4%, respectively, while agricultural expanded by 2.8%. The average inflation for 2004 was 7.7%, up from 3.2% in 2003. Broad-based economic growth has increased broad money supply and credit by 28% and 36%, respectively. The fiscal deficit was maintained at 3.8%, below the Government's target of 5%. The fiscal position is expected to continue to expand, though within manageable limits, to cover the investments in infrastructure and adjustment costs of structural reforms. The average economic growth for 2005–2007 is expected to be 7.5%–8.0%. The key development challenges for Viet Nam are to sustain the economic growth and reduce inequality through targeted poverty reduction. To increase the competitiveness and maintain GDP growth of at least 7.5%, Viet Nam needs to maintain an investment level of 35% of GDP, mainly to develop the physical infrastructure.

2. The key challenge facing Viet Nam's power sector is maintaining adequate investments to meet the rapid growth in demand for electricity. The Fifth Master Plan, revised in March 2003, states that the total investment requirement of the power sector needs an estimated \$17.5 billion for 2004–2010, consisting of \$13.0 billion for generation and \$4.5 billion for transmission and distribution. The internal cash generation of the sector will provide half of the funding requirement with borrowings (i.e., overseas development assistance, as well as export credit), with investments from non-sector entities, including private sector, filling the balance. The operational and financial performance of EVN has improved consistently during the past 5 years. The average tariff at around \$0.052/kilowatt-hour (kWh) is below the long-run marginal cost (LRMC), which is estimated at around \$0.075/kWh). However, the self-financing ratio and debt service coverage ratio have been maintained within the prudential limits without explicit fiscal subsidies. The heavier borrowing required by the sector to finance the large capital investment program will require improvement in the internal cash generation of the sector.

### B. Demand Analysis

3. Viet Nam's demand for electricity has grown 14.2% per annum during 1990–2003. The growth rate increased to 15.2% during 1999–2004, with electricity sales rising to 39.7 terawatt-hour (TWh) in 2004 from 19.5 TWh in 1999. The demand growth was driven by (i) rapid broad-based growth in industrial and commercial sectors, (ii) increase in electrification from less than 40% in 1990 to more than 80% in 2004, (iii) urbanization, and (iv) higher living standards with domestic demand growing at 19%. The demand has grown in all three regions of the country at roughly similar rates. However, Viet Nam's per capita consumption, at around 500 kWh, is relatively low compared with neighboring countries, such as the People's Republic of China (PRC) and Thailand. The electricity demand elasticity to GDP growth is expected to be maintained at 1.9 due to the energy-intensive nature of Viet Nam's industry-led economic growth. Given forecasted economic growth of 7% for 2005–2015, this translates into electricity demand growth of 13%, which is lower than the growth rate in recent times. The electricity demand and the peak demand are expected to rise from 39.7 TWh and 8,400 megawatt (MW), respectively, in 2004 to 84.5 TWh and 17,000 MW in 2010, and 139.2 TWh and 26,900 MW in 2015. The system losses would be reduced from 14.7% in 2004 to 13.8% in 2010 and 12.3 % in

2015, while the load factor will improve from 65.7% in 2004 to 68.4% in 2010 and 69.1% in 2015.

### **C. Economic Rationale**

4. The Government is committed to establishing a wholesale electricity market in Viet Nam with competition in power generation. Except for the few multipurpose power plants, all the other public sector power plants will be equitized (i.e., partially privatized) and will take part in the proposed power market. However, power transmission will remain within the public sector due to its monopolistic nature, the strategic importance of maintaining the security of the power supply, and the necessity to ensure comparable conditions for competing power plants. The transmission business of Electricity of Viet Nam (EVN) will be consolidated as a separate business unit, which will be regulated economically under the proposed electricity regulator. The continued public sector investments in power transmission is justified based on the importance of power transmission to meet the power demand and its high economic return, though the financial return is moderate due to the difficulties of pricing network services.

### **D. Least Cost Analysis**

5. The locations of new power plants and the high growth load centers drive the expansion of the power transmission system. The power generation expansion program for Viet Nam was developed using a least-cost expansion planning algorithm (WASP III) under the Fifth Master Plan in 2000, which was updated in 2003 to account for the increase in projected demand growth. The algorithm minimizes the discounted sum of capital and operating cost by selecting the optimum generation plant mix. The underlying assumptions in the optimization program for fuel cost and capital cost of candidate power plants, and types of candidate power plants considered, are reviewed and found to be reasonable. The transmission planning aims to connect the selected power plants in the least-cost generation expansion plan with the load centers at the least cost (taking into account transmission losses and capital cost) subject to power system security and stability constraints. The operating voltage and the capacity of transmission lines are selected using least-cost planning criteria, while the locations and capacities of substations are selected to deliver the power to load centers at the least cost. The analysis has shown that 500 kilovolt (kV) is the least-cost voltage for transmitting power from proposed large hydropower projects in northern Viet Nam to the load centers in Hanoi.

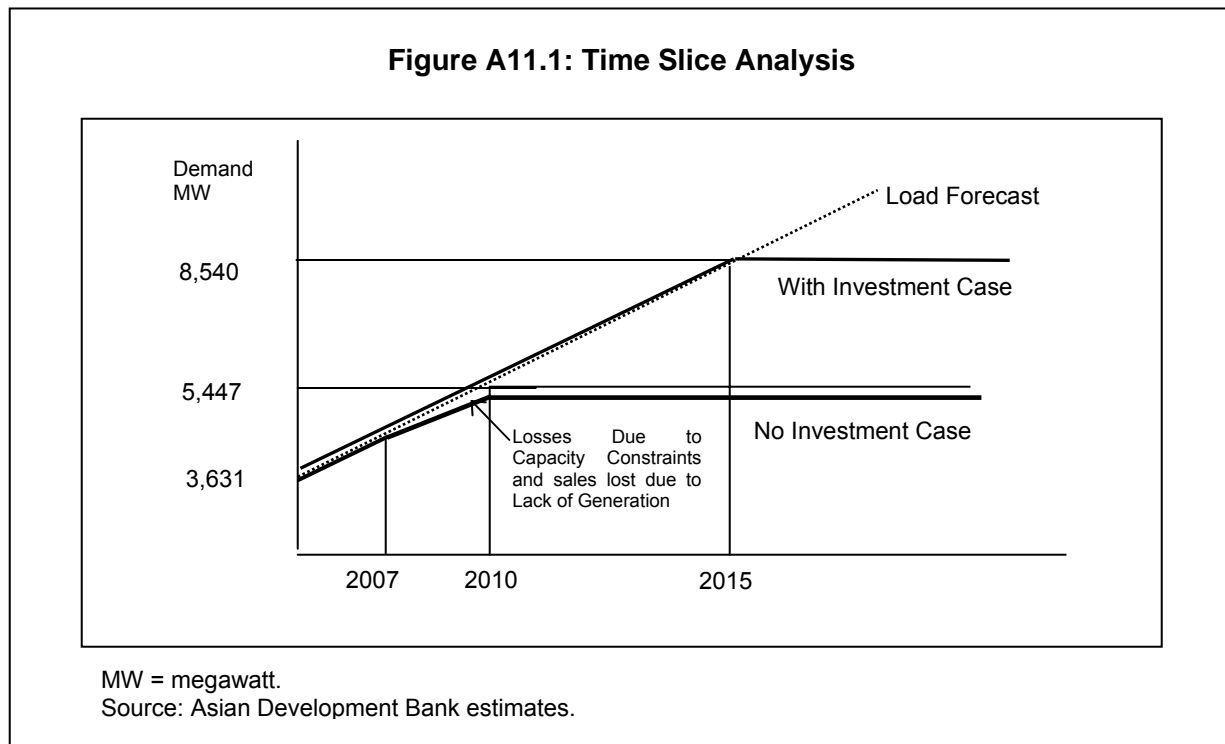
### **E. Economic Benefit- Cost Analysis**

6. The proposed sector loan comprises individual subprojects, including a 500 kV transmission line and a series of substations, included in the Government's power sector investment program, to meet growing electricity demand in the northern region. As these individual subprojects are not stand-alone investments, the economic and financial analyses were conducted using a macro time-slice approach for the northern region investment program. The investment program, which analyzed the period from 2007 to 2015, is based on the least-cost expansion plan for generation and transmission.

7. The financial and economic viability was examined by comparing the costs and benefits of meeting demand growth from 2007 to 2030 under the "with" investment program scenario and a "without" investment program scenario. The "without" scenario assumes that no investments will be made in the north beyond 2007, though it accounts for the possibility of meeting demand until 2010 utilizing the spare capacity of the system in 2007. This will be at a lower reliability due to the probable increased loss of load and transmission losses. The

investment program for the central and southern regions is assumed to continue. The point at which the demand would be curtailed was determined by undertaking power system studies until the transmission capacity on the north–south 500 kV line is exceeded. The incremental demand in the north would be met by power flows from the south in the absence of additional investments in the north under the “without” case. This was found to be the point when maximum demand in northern power system reaches 5,447 MW in 2010.

8. The “with” case assumes that the planned investments will be made during the time slice (i.e., 2007–2015). Further, it assumes that at the end of the time slice, any incremental sales would require further investments. Hence, financial and economic benefits due to incremental sales after 2015 (i.e., at this point the maximum demand in the northern power system would have reached 8,540 MW) would not be considered in the analysis.



9. The economic and financial benefits are derived from comparing the performance of the power sector in Viet Nam under the “with” and “without” investment scenarios during 2007–2030. These are due to (i) higher sales; (ii) lower transmission losses; and (iii) lower fuel cost per unit due to optimal plant mix, as the generation and transmission system will be based on the least-cost planning criteria under the “with” case. This is illustrated in Tables A11.1 and Table A11.2. The total generation is maintained at the same level as the “with” case until 2010 using the surplus generation available in the south. This increases transmission losses and fuel cost, and lowers sales due to increased losses. After 2010, the total generation under “without” case falls below the total generation under the “with” case, as transmission constraints become binding. As a result, transmission losses as a percentage drop below the levels reached in 2010. The share of thermal power and the fuel cost per unit of thermal energy generated also is higher in the “without” case than in the “with” case due to non-optimum dispatch of power plants in the “without” case. The long-term equilibrium fuel cost forecasts are used in the economic analysis (i.e., coal at \$27.6/ton, furnace oil at \$157.5/ton, natural gas at \$93.8/ton, and diesel at \$310/ton).

**Table A11.1: Comparison of Losses “With” and “Without” Program**

| Year | “With” Case         |                |               | “Without” case      |                |               |
|------|---------------------|----------------|---------------|---------------------|----------------|---------------|
|      | Generation<br>(GWh) | Sales<br>(GWh) | Losses<br>(%) | Generation<br>(GWh) | Sales<br>(GWh) | Losses<br>(%) |
| 2008 | 77,738              | 66,972         | 14.1          | 77,074              | 65,027         | 15.6          |
| 2009 | 87,448              | 75,275         | 13.9          | 87,536              | 71,350         | 18.5          |
| 2010 | 97,964              | 84,454         | 13.8          | 95,530              | 76,821         | 19.6          |
| 2011 | 109,162             | 94,512         | 13.4          | 102,493             | 84,149         | 17.9          |
| 2012 | 120,862             | 105,089        | 13.1          | 108,763             | 89,717         | 17.5          |
| 2013 | 132,905             | 116,053        | 12.7          | 114,791             | 94,327         | 17.8          |
| 2014 | 145,455             | 127,288        | 12.5          | 123,096             | 100,819        | 18.1          |
| 2015 | 158,687             | 139,169        | 12.3          | 126,869             | 104,275        | 17.8          |

GWh = gigawatt-hour.

Source: Asian Development Bank estimates.

**Table A11.2: Comparison of Plant Mix and Thermal Power Fuel Cost “With” and “Without” Program**

| Year | “With” Case    |                  |              |                      | “Without” Case |                  |              |                      |
|------|----------------|------------------|--------------|----------------------|----------------|------------------|--------------|----------------------|
|      | Hydro<br>(GWh) | Thermal<br>(GWh) | IPP<br>(GWh) | Fuel Cost<br>(D/kWh) | Hydro<br>(GWh) | Thermal<br>(GWh) | IPP<br>(GWh) | Fuel Cost<br>(D/kWh) |
| 2008 | 27,353         | 37,049           | 12,636       | 429                  | 27,064         | 37,202           | 12,808       | 429                  |
| 2009 | 32,272         | 38,652           | 16,391       | 400                  | 31,222         | 39,407           | 16,907       | 409                  |
| 2010 | 39,196         | 36,686           | 23,223       | 384                  | 37,985         | 35,459           | 22,086       | 409                  |
| 2011 | 47,300         | 39,665           | 24,654       | 367                  | 40,472         | 37,343           | 24,678       | 411                  |
| 2012 | 53,696         | 44,416           | 25,781       | 340                  | 40,724         | 40,329           | 27,710       | 412                  |
| 2013 | 60,799         | 48,496           | 26,161       | 340                  | 41,426         | 44,770           | 28,595       | 416                  |
| 2014 | 63,795         | 51,588           | 32,522       | 343                  | 41,694         | 46,869           | 34,533       | 417                  |
| 2015 | 64,472         | 55,209           | 35,378       | 349                  | 42,368         | 48,641           | 35,860       | 419                  |

D/kWh = Dong per kilowatt-hour, GWh – gigawatt-hour, IPP = independent power producer.

Source: Asian Development Bank estimates.

## F. Valuation of Economic Benefits due to Additional Sales

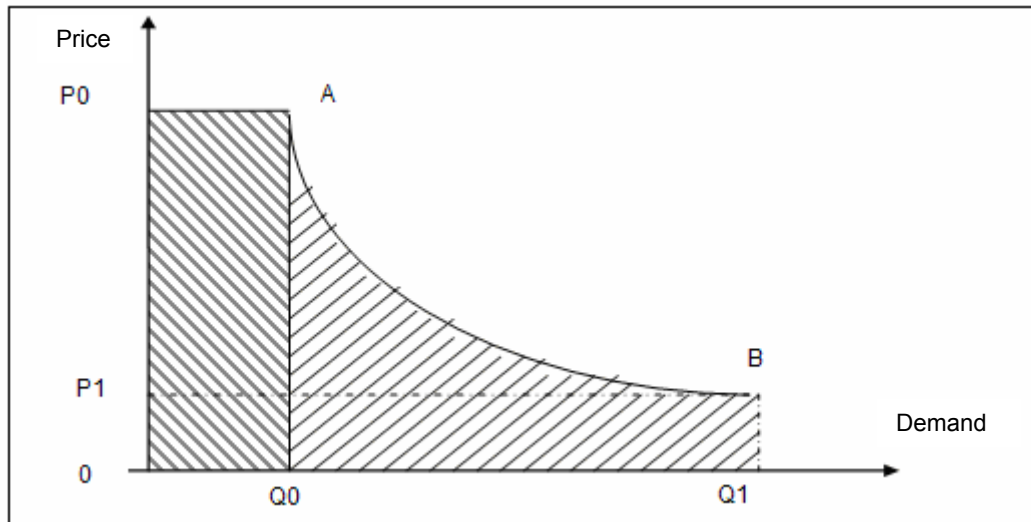
10. The economic benefits due to incremental sales under the “with” case compared with the “without” case have been quantified separately for residential and nonresidential consumers. The residential consumers can be divided further into existing and additional consumers (i.e., compared with the “without” case) for the purpose of economic benefit calculation. The demand curve is described by the following mathematical equation.

$$\ln \{ Q \} = a + b * P$$

Where “a” and “b” are constants and “P” and “Q” are energy price and demand respectively.

### 1. Economic Benefits to Additional Residential Consumers

11. The economic benefits for the additional residential consumers are due to the substitution of their nonincremental energy consumption with electricity, and the incremental energy consumption caused by the availability of cheaper energy source. These are illustrated in Figure A11.2.

**Figure A11.2: Demand Curve for Additional Residential Consumers**

$P_0$  = electricity tariff on real terms,  $P_1$  = resource cost in the absence of electricity  
 $Q_0$  = energy consumption per household in the absence of electricity  
 $Q_1$  = energy consumption per household at the prevailing tariff.  
 Source: Asian Development Bank estimates.

12. The economic benefits due to nonincremental consumption is represented by the area  $O P_0 A Q_0$ . The economic benefits due to incremental consumption is represented by the area  $Q_0 A B Q_1$ . It has been estimated<sup>1</sup> using consumer surveys for residential consumers in Viet Nam,  $P_0 = 5,127$  D/kWh and  $Q_0 = 119$  kWh/household, resulting in an economic benefit of D610,113 per consumer per year.

**Table A11.3 : Nonincremental Benefits to New Residential Consumers**

| Year | No. of Consumers |            | No. of Additional Consumers | Nonincremental Benefits (D billion) |
|------|------------------|------------|-----------------------------|-------------------------------------|
|      | "With"           | "Without"  |                             |                                     |
| 2008 | 19,202,974       | 19,081,382 | 121,592                     | 74                                  |
| 2009 | 19,809,985       | 19,563,751 | 246,233                     | 150                                 |
| 2010 | 20,436,183       | 20,062,184 | 374,000                     | 228                                 |
| 2011 | 21,082,176       | 20,577,206 | 504,970                     | 308                                 |
| 2012 | 21,748,589       | 21,109,364 | 639,225                     | 390                                 |
| 2013 | 22,436,068       | 21,659,222 | 776,846                     | 474                                 |
| 2014 | 23,145,278       | 22,227,359 | 917,919                     | 560                                 |
| 2015 | 23,876,906       | 22,814,378 | 1,062,529                   | 648                                 |

D = Dong per kilowatt-hour,  
 Source: Asian Development Bank estimates.

<sup>1</sup> Robert Vernstorm Associates. 2003. *EVN Tariffs: Interim Report*. Economic Consulting Associates, Hanoi, Viet Nam.

13. The incremental benefits of new consumers is represented by the area  $Q_0 A B P_1$ . This can be computed by integrating the area under the demand curve, which is shown<sup>2</sup> to equal

$$Q_1 * (P_1 - 1 / b) - Q_0 * (P_0 - 1 / b)$$

Where “b” is the coefficient for demand curve for the relevant year.

14. Although  $P_0$  (i.e., 5,127 D/kWh) and  $Q_0$  (i.e., 119 kWh) can be assumed to be constant during the study period,  $P_1$  and  $Q_1$  vary during the period under consideration. This is due to the change in the residential consumers on real terms during 2008–2015, as well as the change in consumption per household.

**Table A11.4: Incremental Benefits to New Residential Consumers**

| Year | $P_1$<br>(D/kWh) | $Q_1$<br>(kWh) | Benefits Per<br>Consumer (D) | No. of Additional<br>Consumers | Incremental<br>Benefits<br>(D billion) |
|------|------------------|----------------|------------------------------|--------------------------------|--|
| 2008 | 768              | 1,378          | 2,688,693                    | 121,592                        | 327                                    |
| 2009 | 779              | 1,485          | 2,899,976                    | 246,233                        | 714                                    |
| 2010 | 790              | 1,593          | 3,112,052                    | 374,000                        | 1,164                                  |
| 2011 | 802              | 1,655          | 3,240,443                    | 504,970                        | 1,636                                  |
| 2012 | 812              | 1,707          | 3,348,778                    | 639,225                        | 2,141                                  |
| 2013 | 823              | 1,747          | 3,435,355                    | 776,846                        | 2,669                                  |
| 2014 | 835              | 1,773          | 3,497,742                    | 917,919                        | 3,211                                  |
| 2015 | 846              | 1,792          | 3,547,022                    | 1,062,529                      | 3,769                                  |

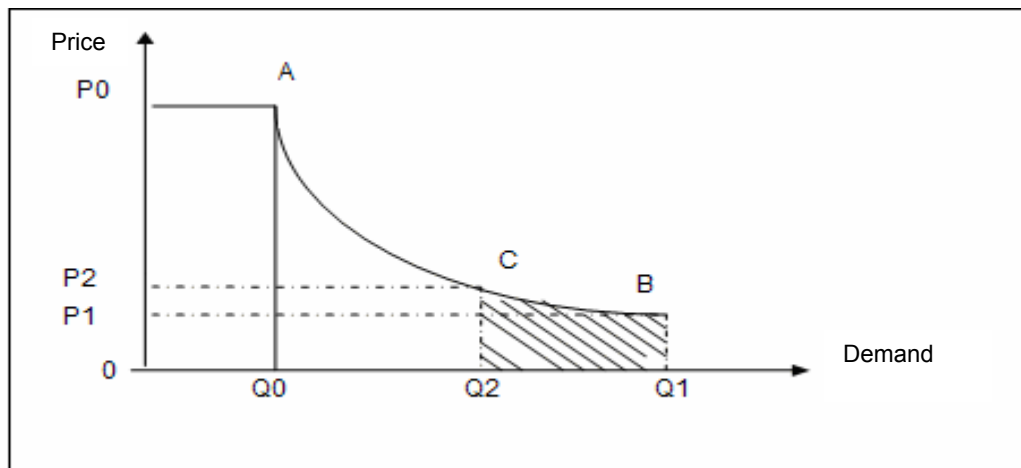
D/kWh = Dong

Source: Asian Development Bank estimates.

## 2. Economic Benefits to Existing Residential Consumers

15. The economic benefits for the existing residential consumers are due to the incremental electricity consumption under the “with” case compared with the “without” case. This is illustrated in Figure A11.3. The benefits to the existing consumers are represented by the area  $Q_2 C B Q_1$ .

<sup>2</sup> Choynowski, P. 2002. *Measuring Willingness to Pay for Electricity*. ERD Technical Note Series No. 3. Manila. ADB.

**Figure A11.3 Demand Curve for Existing Residential Consumers**

$Q_2$  = energy consumption per household under “without” case  
 $P_2$  = market clearance price under the “without” case  
 Source: Asian Development Bank estimates.

**Table A11.5: Incremental Benefits to Existing Residential Consumers**

| Year | $P_2$<br>(D/kWh) | $Q_2$<br>(kWh) | $P_1$<br>(D/kWh) | $Q_1$<br>(kWh) | Benefit per<br>Household<br>(D) | No. of<br>Consumers<br>(Without ) | Total<br>Benefits<br>(D billion) |
|------|------------------|----------------|------------------|----------------|---------------------------------|-----------------------------------|----------------------------------|
| 2008 | 804              | 1,351          | 768              | 1,378          | 20,835                          | 19,081,382                        | 398                              |
| 2009 | 850              | 1,425          | 779              | 1,485          | 48,621                          | 19,563,751                        | 951                              |
| 2010 | 918              | 1,476          | 790              | 1,593          | 99,759                          | 20,062,184                        | 2,001                            |
| 2011 | 953              | 1,510          | 802              | 1,655          | 127,288                         | 20,577,206                        | 2,619                            |
| 2012 | 1,020            | 1,501          | 812              | 1,707          | 187,850                         | 21,109,364                        | 3,965                            |
| 2013 | 1,099            | 1,470          | 823              | 1,747          | 264,240                         | 21,659,222                        | 5,723                            |
| 2014 | 1,141            | 1,462          | 835              | 1,773          | 305,323                         | 22,227,359                        | 6,787                            |
| 2015 | 1,229            | 1,405          | 846              | 1,792          | 398,367                         | 22,814,378                        | 9,088                            |

D = Dong, D/kWh = Dong per kilowatt-hour, kWh = kilowatt-hour.

Source: Asian Development Bank estimates.

### 3. Benefits for Nonresidential Consumers

16. Nondomestic consumers are assumed to use self-generation to meet their energy needs when electricity supply is curtailed. Hence, the additional electricity sales in the “with” case compared with the “without” case to the nonresidential consumers is considered as nonincremental consumption, and is valued at the resource cost saving (i.e., cost of meeting the demand using self-generation). This is estimated (footnote 1) to be D1,139/kWh for nonresidential consumers using the cost of generation of small-scale diesel generators.

**Table A11.6: Economic Benefits to Nonresidential Consumers**

| Year | Energy Sales (GWh): (“With” – “Without”) |            |             | Economic Benefits<br>(D billion) |
|------|--|------------|-------------|----------------------------------|
|      | Industry                                 | Commercial | Agriculture |                                  |
| 2008 | 894                                      | 151        | 21          | 1,066                            |
| 2009 | 2,011                                    | 335        | 45          | 2,091                            |
| 2010 | 3,958                                    | 650        | 84          | 4,691                            |
| 2011 | 5,541                                    | 887        | 109         | 6,537                            |
| 2012 | 8,463                                    | 1,322      | 156         | 9,942                            |
| 2013 | 12,302                                   | 1,877      | 212         | 14,303                           |
| 2014 | 15,394                                   | 2,294      | 248         | 17,936                           |
| 2015 | 20,817                                   | 3,033      | 314         | 24,164                           |

D = Dong, GWh = gigawatt-hour.

Note: “with – without” means the incremental sales with case compared to the without case.

Source: Asian Development Bank estimates.

#### 4. Valuation of Cost of Investment Program

17. The least-cost investment program has been costed at the economic prices to derive the investment cost under the “with” case scenario. To derive the “without” case investment program, the investments in the power plants committed but scheduled for commissioning during 2007–2015 in northern Viet Nam and the uncommitted investments in transmission in northern Viet Nam during 2007–2015 are excluded from the “with” case scenario. The difference between the two scenarios (i.e., incremental capital investment) is used in the benefit-cost analysis. The operation and maintenance cost of the two scenarios is estimated separately for the two scenarios as a percentage (i.e., 3%) of the capital investment in different plants types under the two scenarios. The economic analysis uses the domestic price numeraire by adjusting for capital and operational costs valued at border prices, and multiplying by the shadow exchange rate factor (SERF).

18. SERF is estimated to be 1.1 for Viet Nam. The fuel cost and the power purchase cost from independent power producers (IPP) is higher in the “with” case than in the “without” case due to the higher electricity sales in the “with” case. The analysis shows that economic benefits exceed the costs when discounted at a rate of 12%. Further, the investment program has a positive net present value of D72,829 trillion and an economic internal rate of return (EIRR) of 23.1% based on the net benefits shown in Table A11.7, which exceeds the hurdle rate of 12%.

**Table A11.7: Economic Benefit-Cost Analysis**  
(D billion)

| Year      | Economic Benefits | Capex  | O & M | Fuel Cost | IPP Cost | Economic Cost | Net Benefits |
|-----------|-------------------|--------|-------|-----------|----------|---------------|--------------|
| 2007      | 0                 | 5,002  | 0     | 0         | 0        | 5,002         | (5,002)      |
| 2008      | 2,012             | 15,384 | 137   | (37)      | (108)    | 15,377        | (13,365)     |
| 2009      | 4,539             | 27,066 | 465   | (283)     | (319)    | 26,930        | (22,391)     |
| 2010      | 8,737             | 34,045 | 1,463 | (63)      | 648      | 36,092        | (27,355)     |
| 2011      | 12,010            | 21,484 | 3,083 | (77)      | (71)     | 24,419        | (12,409)     |
| 2012      | 17,820            | 9,812  | 3,531 | (243)     | (1,241)  | 11,860        | 5,960        |
| 2013      | 25,256            | 2,670  | 3,743 | (338)     | (1,543)  | 4,533         | 20,724       |
| 2014      | 30,986            | 771    | 4,005 | (182)     | (1,306)  | 3,288         | 27,699       |
| 2015–2030 | 41,028            |        | 4,190 | 62        | (376)    | 3,876         | 37,152       |

IPP = independent power producer, O & M = operations and manual.

Source: Asian Development Bank estimates.

## G. Financial Benefit- Cost Analysis

19. The financial benefit-cost analysis was consistent with the economic benefit-cost analysis. The incremental sales are valued at the forecasted tariffs based on the financial analysis (Appendix 3) for different consumer categories. The capital cost and operation and maintenance cost is expressed in financial terms. Table A11.8 shows the financial cash flow analysis, and the FIRR based on the net cash flows is 14.1%.

**Table A11.8: Financial Cash Flow Analysis**  
(D billion)

| Year      | Revenues | Capex  | O &M  | Fuel Cost | IPP Cost | Taxes  | Net Cash Flow |
|-----------|----------|--------|-------|-----------|----------|--------|---------------|
| 2007      | 0        | 4,552  | 0     | 0         | 0        | 0      | (4,552)       |
| 2008      | 1,643    | 14,636 | 130   | (48)      | (108)    | 0      | (12,968)      |
| 2009      | 3,705    | 24,901 | 451   | (401)     | (319)    | 0      | (20,927)      |
| 2010      | 7,309    | 31,221 | 1,346 | (90)      | 648      | 0      | (25,816)      |
| 2011      | 10,101   | 19,855 | 2,883 | (110)     | (71)     | 0      | (12,455)      |
| 2012      | 15,232   | 9,181  | 3,077 | (338)     | (1,241)  | 969    | 3,584         |
| 2013      | 21,901   | 2,469  | 3,653 | (467)     | (1,543)  | 4,761  | 13,028        |
| 2014      | 27,139   | 707    | 3,542 | (257)     | (1,306)  | 8,390  | 16,092        |
| 2015–2030 | 36,377   | 0      | 3,706 | 88        | (376)    | 12,479 | 20,479        |

D = Dong, O&M = operation and manual.

Source: Asian Development Bank estimates.

20. The weighted average cost of capital (WACC) (Table A11.9) is calculated for EVN's investments in northern Viet Nam during 2004–2010. The financing sources are assumed to consist of EVN's equity contribution, financed through retained earnings, and a combination of foreign and local currency loans. The foreign and local currency loans earmarked for generation, transmission, and distribution are assumed to carry different nominal interest rates based on the expectations and experience of EVN.

**Table A11.9: WACC Computation**

| Item          | Financing<br>(1,000 trD) | Nominal<br>Cost<br>(%) | Weigh<br>(%) | Tax Adj.<br>Nominal<br>Cost (%) | Real<br>Cost<br>(%) | Composite<br>Cost<br>(%) |
|---------------|--------------------------|------------------------|--------------|---------------------------------|---------------------|--------------------------|
| EVN Equity    | 35.8                     | 17.9                   | 33.3         | 17.9                            | 14.5                | 4.82                     |
| Foreign Loans |                          |                        |              |                                 |                     |                          |
| Generation    | 20.1                     | 5.6                    | 18.7         | 3.81                            | 2.78                | 0.52                     |
| Transmission  | 6.1                      | 6.7                    | 5.7          | 4.56                            | 3.52                | 0.20                     |
| Distribution  | 7.8                      | 6.7                    | 7.3          | 4.56                            | 3.52                | 0.26                     |
| Local Loans   |                          |                        |              |                                 |                     |                          |
| Generation    | 20.1                     | 9.0                    | 18.7         | 6.12                            | 3.03                | 0.57                     |
| Transmission  | 7.6                      | 9.0                    | 7.1          | 6.12                            | 3.03                | 0.21                     |
| Distribution  | 9.8                      | 9.0                    | 9.1          | 6.12                            | 3.03                | 0.28                     |
| <b>Total</b>  | <b>107.3</b>             |                        | <b>100</b>   |                                 |                     | <b>6.86</b>              |

trD = trillion Dong.

Source: Asian Development Bank estimates.

21. The cost of EVN's equity is estimated using a capital asset pricing model. The risk-free rate is taken as 8.5% based on the prevailing rate of Government bonds denominated in local currency. The market risk premium for Viet Nam is taken as 11% based on the average return on listed companies in Viet Nam. The equity beta for EVN is estimated to be 0.85 based on the listed power utilities in other developing countries. The result is a risk premium of 9.4% (i.e.,

11% multiplied by 0.85) and a nominal equity cost of 17.7% (i.e., 8.5% plus 9.4%). The other assumptions are a domestic inflation rate of 3%, international interest rate of 1%, tax rate of 32%, and a minimum interest rate of 2.5% in view of the prevailing low interest rates. As shown in Table A11.9, the WACC for the investment program in northern Viet Nam during 2004–2010 is 6.86%. The financial internal rate of return (FIRR) is 14.1%, and the financial net present value (NPV) calculated at WACC (i.e., 6.86%) is D52,538 billion.

## H. Sensitivity and Risk Analysis

22. The sensitivity of the EIRR (Table A11.10) to several adverse movements in key variables was analyzed. As the economic analysis was carried out in the incremental basis by comparing the “with” case and “without” case, (i) decrease in the electricity sales, (ii) reduced willingness to pay, (iii) increased capital expenditure, (iv) increased operation and manual (O&M) expenses, and (v) reduced fuel cost. The sensitivity of FIRR also was computed for the adverse movements in the same variables, except the change in willingness to pay, which was replaced by reduced electricity tariffs.

23. The reduction in fuel cost and IPP cost tends to reduce the EIRR and FIRR, as it lowers the economic benefits attributable to the investment program by lowering the savings in fuel cost due to investment program. However, the sensitivity analysis shows that the economic and financial rate of return of the investment program is sufficiently robust to withstand adverse movements in key variables. The results of the sensitivity analysis are summarized in Table A11.10.

**Table A11.10: Sensitivity Analysis**

| Scenario                           | Economic Analysis |          | Financial Analysis |          |
|------------------------------------|-------------------|----------|--------------------|----------|
|                                    | NPV               | EIRR (%) | NPV                | FIRR (%) |
| 20% increase in capital expenses   | 24,240            | 15.4     | 28,237             | 10.9     |
| 20% reduction in benefits/revenues | 57,567            | 19.6     | 41,842             | 11.8     |
| 20% increase in capex              | 68,842            | 22.5     | 49,612             | 13.7     |
| 20% decrease in fuel costs         | 72,731            | 23.1     | 52,425             | 14.0     |
| 20% decrease in IPP cost           | 72,528            | 23.0     | 52,162             | 14.0     |
| 20% increase in capex and O&M      | 53,580            | 19.1     | 38,315             | 11.4     |

FIRR = financial internal rate of return, IPP = independent power producer, NPV = net present value, O&M = operation and manual.

Source: Asian Development Bank estimates.

24. A risk analysis was carried out using the @RISK software by probabilistically simulating the key variables to determine the mean value and the 95% confidence interval of EIRR and FIRR. Capital costs are assumed to be uniformly distributed with maximum and minimum values of 0.7 and 0.3. O&M, fuel, and IPP prices are normally distributed with a standard deviation of 0.15 on normalized basis. The results are summarized in Table A11.11.

**Table A11.11: Risk Analysis**

| Item                     | Economic Analysis   |             | Financial Analysis  |             |
|--------------------------|---------------------|-------------|---------------------|-------------|
|                          | NPV<br>(D trillion) | EIRR        | NPV<br>(D trillion) | FIRR        |
| Mean Value               | 72.8                | 23.6%       | 52.3                | 14.3%       |
| 95% Confidence Interval. | 38.3–07.9           | 17.3%–31.5% | 26.3–76.9           | 10.1%–19.3% |

D = Dong, EIRR = economic internal rate of return, FIRR = financial internal rate of return, NPV = net present value.

Source: Asian Development Bank estimates.

25. A distribution analysis (Table A11.12) was carried out to determine how the project benefits and costs are distributed among different stakeholders. The financial cash flows and economic benefits and revenues are discounted at a 12% rate. At this discount rate, the financial NPV to utility becomes negative, as the discount rate exceeds the FIRR. The distribution analysis shows that most of the benefits accrue to the residential consumers due to the large difference in residential tariffs, as well as residential consumers' willingness to pay.

**Table A11.12: Distribution Analysis**

| Item                     | Financial NPV  | Con Factor | Economic NPV   | Diff in NPV    | Benefit Allocation |         |          |              |
|--------------------------|----------------|------------|----------------|----------------|--------------------|---------|----------|--------------|
|                          |                |            |                |                | EVN                | Gov     | Res Cons | Non Res Cons |
| <b>Benefits</b>          |                |            |                |                |                    |         |          |              |
| Res Rev                  | 38,232         |            | 38,232         |                |                    |         |          |              |
| Non Res Rev              | 107,137        |            | 107,137        |                |                    |         |          |              |
| Res Consumer Surplus     |                |            | 56,281         | 56,281         |                    |         | 56,281   |              |
| Non Res Consumer Surplus |                |            | 2,313          | 2,313          |                    |         |          | 2,313        |
| <b>Total Benefits</b>    | <b>145,369</b> |            | <b>203,964</b> | <b>58,595</b>  |                    |         |          |              |
| <b>Costs</b>             |                |            |                |                |                    |         |          |              |
| Capex                    | (70,618)       | 1.08       | (76,312)       | (5,694)        |                    | (5,694) |          |              |
| O&M                      | (17,996)       | 1.11       | (19,935)       | (1,939)        |                    | (1,939) |          |              |
| Fuel                     | 718            | 0.72       | 515            |                |                    |         |          |              |
| IPP Purchases            | 2,855          | 1.00       | 2,855          |                |                    |         |          |              |
| Profits Tax              | (50,906)       |            |                | 50,906         |                    | 50,906  |          |              |
| Total Cost               | (135,947)      | 0.68       | (92,877)       | 43,070         |                    |         |          |              |
| <b>Net Benefits</b>      | <b>9,422</b>   |            | <b>11,1087</b> | <b>101,665</b> | <b>9,422</b>       |         |          |              |
| Gainers/Losers           |                |            |                |                | 9,422              | 43,273  | 56,281   | 2,313        |

Cons = consumer, EVN = Electricity of Viet Nam, Gov = Government, NPV = net present value, O&M = operation and manual, Res = residential.

Source: Asian Development Bank estimates.

## SUMMARY RESETTLEMENT FRAMEWORK AND PLAN

### A. Introduction

1. A resettlement framework (RF) was prepared to guide in the resettlement planning and implementation for all subprojects to be processed under the Northern Power Expansion Sector Project (the Project). It was built upon the laws of the Government of Viet Nam, principally the revised 2003 Land Law, and Decrees 197 and 188; as well as Asian Development Bank's (ADB's) *Policy on Involuntary Resettlement* (1995). Provisions and principles adopted in this RF, and the resettlement plans (RP) that were prepared subsequently, will supersede the provisions of relevant decrees in force in Viet Nam wherever a gap exists, as per Decree 17.

2. For the three core subprojects, two RPs for the 240 kilometer (km) 500 kilovolt (kV) Son La–Nho Quan transmission line and the 151.9 km 220 kV Thanh Hoa–Vinh transmission line were prepared based on the objectives, policies, screening, and planning procedures adopted in the RF. An RP is not required for the 220 kV Van Tri substation, because it will not require any land acquisition and will not have any resettlement impacts as the transformer will be installed within the existing substation area.

### B. Scope of Land Acquisition and Resettlement Impacts

3. The two core subproject RPs were prepared based on a preliminary design. The transmission routes were realigned to avoid densely populated areas to minimize resettlement impacts. For the 500 kV Son La–Nho Quan transmission line, no houses and structures are permitted along the transmission line corridor. Of the 172 people who will have to relocate outside the transmission line corridor, 153 have residual land to rebuild their houses. The remaining 19 people who do not have sufficient land will be provided with another plot of residential land within the commune. The subproject will require the acquisition of 1.95 hectare (ha) of residential land, and 29.3 ha of residential land will be affected due to a change in land use (i.e., residential land will be converted into other purposes), for which an easement fee will be paid. For the tower foundations,<sup>1</sup> 14.5 ha of land will be acquired, while 189.65 ha of land will be affected temporarily. Secondary structures (sheds, toilets), crops (28.6 ha), and 5,965 trees also will be affected. Most of the people affected by the Son La–Nho Quan transmission line are ethnic minorities (Muong and Thai). Social analysis shows that ethnic minorities are not any more vulnerable than Kinh households to the risks associated with resettlement, since they live mostly in mixed communities with Kinh households.

4. For the 220 kV Thanh Hoa–Vinh transmission line, houses and structures not taller than 5 meters are permitted along the transmission line corridor. However, if more than 70% of the residential land will be traversed by the transmission line corridor, the entire residential area will be acquired. Of the 82 affected persons (AP) identified along the transmission line corridor, 24 will lose more than 70% of their residential land (14.5 ha) and will have to relocate to another plot of residential land within the commune. The affected trees (3,519) identified along the transmission line corridor will be cut or trimmed due to height restrictions, and about 3.67 ha of crops also will be affected. For the tower foundations, 6.8 ha of land will be acquired, while 60.7 ha of land will be affected temporarily.

---

<sup>1</sup> For the tower foundations (applicable to the two subprojects), most of the land identified is forest or agricultural. The locations of the towers will be known once the detailed design has been completed. Therefore, the names and number of APs and level of impact are not known.

### C. Project Principles and Entitlements Policy

5. The following resettlement principles adopted for the Project are as follows:
- (i) Involuntary resettlement and loss of land, structures and other assets and incomes will be avoided or minimized by exploring all viable options.
  - (ii) APs are entitled to compensation for all lost and affected assets, incomes, and businesses at replacement cost, and provided with rehabilitation measures sufficient to assist them to improve or at least maintain their pre-project living standards, incomes, and productive capacity.
  - (iii) Lack of legal rights to the assets lost or adversely affected will not bar APs from entitlement to such compensation and rehabilitation measures. Those without legal title to land and/or structures occupied or used by them (e.g., non-titled APs) will be entitled to various kinds of resettlement assistance, provided they cultivated and occupied the land before the eligibility cutoff date. Resettlement assistance to non-titled APs will include compensation for lost assets and restoration of income and living standards.
  - (iv) Compensation for affected assets will be provided at replacement cost. Where relocation or displacement is required, efforts will be made to maintain the social and cultural institutions of the people being resettled and host community to the extent possible.
  - (v) Preparation of RPs (as part of subproject preparation) and their implementation is to be carried out with participation and consultation of affected people.
  - (vi) Implementation schedule and budget for resettlement planning (including socioeconomic survey and census) and implementation will be incorporated into each subproject and the overall project.
  - (vii) Electricity of Viet Nam (EVN) will ensure that civil works contractors are not issued a notice of possession of site for any section of construction works unless Northern Power Project Management Board (NPPMB) has (a) satisfactorily completed, in accordance with the approved relevant RP for that subproject, compensation payment and relocation to new sites, and (b) ensured that the rehabilitation assistance is in place and the area required for civil works is free of all encumbrances.
  - (viii) Compensation for vulnerable households (female-headed households with dependents, disabled household heads, poor households, landless elderly households with no means of support, households without security of tenure, and ethnic minorities living in remote, isolated areas or in communes with special difficulties as classified under Government Programme 135) will be carried out with respect for their cultural values and specific needs. Assistance will include measures to help them improve their socioeconomic status.
6. The project entitlements (Table A12.1) are designed to cover compensation, resettlement, and rehabilitation for lost assets; and to restore or enhance the livelihoods of all APs. APs will receive compensation in cash or in-kind (e.g., replacement land) at replacement cost for affected assets, as well as various rehabilitation measures. Special assistance will be provided to the severely affected and vulnerable people to help them improve their socioeconomic status.

**Table A12.1: Summary Entitlement Matrix**

| Types of Losses  | Entitlements   |
|--|--|
| Loss of Land, Structures, Crops, and Trees   |  |
| All land temporarily affected (<1 year)  | Rent for period of disruption, compensation for loss of crops or trees, compensation for loss of income for period of disruption for subsequent crops that can not be planted, land restored to pre-project condition.   |
| All land permanently affected  | Full title to replacement land as a priority, or cash compensation at full replacement cost at market value.   |
| Easement for transmission line corridor  | Payment of easement fee on residential land, houses, and structures.   |
| Severe effects (10% or more loss of total productive assets, requiring relocation) | Assistance for livelihood stabilization and socioeconomic programs.  |
| Shops, houses, and secondary structures  | Compensation in cash or in-kind at full replacement cost with no deduction for depreciation or salvaged materials.   |
| Standing crops and trees   | Cash compensation for loss of crops and trees at replacement cost.   |
| Assistance for Livelihood Stabilization and Socioeconomic Programs                 |  |
| Transportation (relocating APs)  | APs relocating within province: D3 million/household.<br>APs relocating to another province: D5 million/household.   |
| Transition subsistence (relocating & severely affected APs)                        | Allowance of 30 kg of rice/person/month for 6–12 months.   |
| Assistance for agricultural land in urban areas                                    | In addition to compensation, cash assistance for agricultural land in urban, peri-urban, or rural residential areas of 20–50% of the market value of agricultural land.  |
| Training for occupational change   | The training will be of a value up to a pre-agreed sum of \$200/trainee, given directly to the training institution involved. Trainees entitled to a subsistence allowance during training period (to a maximum of 6 months), or to a maximum value of \$100/trainee. The unit costs of the skills training will be \$300/trainee. |
| Agricultural extension   | Assistance to improve productivity on remaining agricultural land by linking them with Government-run programs, such as agricultural extension.  |
| Special allowance for poor and vulnerable APs                                      | Allowance of 30 kg of rice/person/month for 6 months (or lump sum equivalent to D450,000/person), even if poor and vulnerable APs are not severely affected.   |
| Other measures   | As provided under social support program, including access to credit and project-related employment  |

AP = affected people, D = Dong, kg = kilogram.

Source: Asian Development Bank and Electricity of Viet Nam.

#### **D. Consultation, Grievance Mechanism, and Disclosure**

7. Consultation began in 2004 through a series of meetings with provinces, districts, and communes, as well as APs. In early 2005, NPPMB and project preparatory technical assistance (TA) consultants consulted further with commune leaders and APs to discuss the resettlement impacts, availability of replacement land, and the required measures and assistance to ensure that APs can restore, if not improve, their livelihoods. Further consultation will be carried out

before the design is finalized, and will continue throughout the Project. A four-step procedure has been established to deal with any resettlement-related issues, concerns, or grievances raised during project implementation. APs will be exempted from administrative and legal fees associated with resolving the grievance.

8. Before ADB's Management Review Meeting (MRM), the RF and RPs will be translated into the Vietnamese language. Copies of the RF and RPs, in English and Vietnamese languages, will be distributed to the respective provinces. The public information booklets prepared for the two subprojects will be translated into Vietnamese language (and ethnic minority language, as required), and will be distributed to all APs. Copies of the RPs will be placed in the respective district and commune offices. In accordance with ADB's new *Public Communications Policy*, the RF and RPs submitted to ADB for review and approval will be immediately uploaded on ADB's resettlement Web site. The final versions of these documents will be uploaded upon Board approval.

### **E. Gender, Ethnicity, and Poverty Issues**

9. Women, ethnic minorities who live in remote and isolated areas, and poor households are among the most vulnerable groups affected by resettlement. In many of the core project areas, the number and proportion of poor households is significantly higher than the national average in Viet Nam. In accordance with the RF, RP preparation and implementation will pay special attention to (i) the role of women's economic activities in restoring living standards; (ii) access to existing credit and agricultural extension for women, ethnic minorities, and poor households; (iii) joint registration of land use rights in the names of husband and wife where households are allocated alternative agricultural and/or residential land; (iv) participation and consultation strategies that encourage the involvement of women, ethnic minorities, and poor households in resettlement planning and implementation; (v) complaints and grievances lodged by women, ethnic minorities, and poor households; and (vi) disaggregated data collection on gender and ethnic minorities to support resettlement planning and monitoring. A project-specific gender strategy has been developed and is included in Section D (Gender and Development) of the Summary Poverty Reduction and Social Strategy (Appendix 13).

### **F. Implementation Arrangements and Schedule**

10. EVN, as the Executing Agency, will appoint a full-time resettlement staff to effectively liaise and coordinate closely with the involved ministries and other agencies, as well as with the compensation and resettlement boards (CARB) and NPPMB. Its project management unit (PMU), NPPMB, has been established in Hanoi. In coordination with relevant agencies, the PMU will manage and supervise the Project. NPPMB will create a social and environment unit (SEU), and will assign full-time and qualified resettlement staff responsible for social issues, particularly (i) resettlement planning and management, (ii) ethnic minority development planning, (iii) HIV/AIDS awareness program, (iv) poverty and social impact assessments, and (v) labor practices.

11. The Project will be implemented over 5 years starting in 2006. Implementation of resettlement and related activities will take place after the mobilization of the project supervision consultant, who will work closely with, and assist, the NPPMB in all resettlement-related activities. Civil works contractors will not be issued a notice of possession of site for any section of construction works unless NPPMB has (i) completed, in accordance with the approved relevant RP for that subproject, compensation payment and relocation to new sites; and (ii) ensured that the rehabilitation assistance is in place, and the area required for civil works is free

of encumbrances. The implementation schedule, with the envisaged sequence of activities, is shown in Table A12.2. Some of these steps will overlap in their timing, while others will be repeated throughout the project schedule.

**Table A12.2: Implementation Schedule**

| <b>Activities</b>   | <b>Timing</b>      |
|---|--------------------|
| Mobilize project supervision consultants including resettlement specialist                        | Month 1            |
| Establish CARBs (if not already in place)   | Month 1            |
| Commence internal monitoring program (including monthly reporting)                                | Month 1            |
| Consultation, information dissemination, participation programs, and grievance resolutions        | Month 2 (ongoing)  |
| Contract and mobilize independent monitoring organization, submit regular monitoring reports      | Month 3 (ongoing)  |
| Conduct updated joint SES and IOL (based on preliminary design) or DMS (based on detailed design) | Month 4            |
| Commence external monitoring program (baseline)   | Month 5 & 6        |
| Disclose draft RP to APs  | Month 5            |
| Submit RP to EVN and ADB and for uploading on ADB resettlement Web site                           | Month 6            |
| EVN and ADB approval of updated plan. Approved RP to be immediately uploaded on ADB Web site      | Month 6            |
| Effect compensation payments and implement land transfer procedures                               | Month 9 (ongoing)  |
| Provide rehabilitation support and assistance   | Month 9 (ongoing)  |
| Ensure appropriate advance evacuation notification (notice to clear construction area)            | Month 9 (ongoing)  |
| Issue notice of possession of sites   | Month 10 (ongoing) |

ADB = Asian Development Bank, AP = affected people, CARB = Compensation and Resettlement Board, DMS = detailed measurement survey, EVN = Electricity of Viet Nam, IOL = inventory of loss, RP = resettlement plan, SES = social economic survey.

Source: Asian Development Bank estimates.

## **G. Monitoring and Evaluation**

12. The implementing agencies (NPPMB and CARBs) and ADB will conduct regular internal monitoring of the RP implementation. NPPMB will submit quarterly monitoring reports to ADB. NPPMB will engage an independent monitoring agency to conduct external monitoring and evaluation, focusing on the social impacts of the Project and whether APs are able to improve or at least restore their pre-project living standards, incomes, and productive capacity.

## **H. Resettlement Budget and Flow of Funds**

13. The Project has budgeted \$15.0 million for land acquisition and resettlement. This includes compensation payments and allowances to APs, operational and administration expenses, internal and external monitoring, and contingencies.

14. NPPMB will be responsible for channeling funds to the CARBs for compensation for land acquisition and resettlement. NPPMB and CARB will be responsible for paying APs directly for land, crops, trees, houses, other structures, and any allowances.

## SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

### A. Linkages to the Country Poverty Analysis

|   |  |  |  |
|---|--|--|--|
| <b>Is the sector identified as a national priority in country poverty analysis?</b>   | <input checked="" type="checkbox"/> Yes<br><br><input type="checkbox"/> No | <b>Is the sector identified as a national priority in country poverty partnership agreement?</b> | <input checked="" type="checkbox"/> Yes<br><br><input type="checkbox"/> No |
| <p><b>Contribution of the sector/subsector to poverty reduction in Viet Nam:</b></p> <p>Viet Nam has made remarkable 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. Demand for electricity has increased substantially in the past decade as incomes have increased and poverty has declined. This has increased household affordability of appliances and electricity services. However, annual per capita consumption remains among the lowest in Asia at about 500 kilowatt-hours (kWh). Utilization of rural households is even lower, about 180 kWh per year or 15 kWh per month.</p> <p>A reliable and good quality electricity supply is important for economic growth and poverty reduction. Electricity supply promotes alternative sources of income that reduce the vulnerability of households to falling into poverty. Access to electricity has expenditure-reducing effects, which is particularly important for poor households. Reduced expenditure on electricity allows households to use more expenditure for food, education, and health services. Access to electricity also reduces the workload of women in food processing and collecting water. Irrigation using electricity reduces input cost for farmers and increases agricultural productivity.</p> |  |  |  |

### B. Poverty Analysis

**Targeting Classification:** General intervention

#### What type of poverty analysis is needed?

The 2002 Viet Nam Living Standard survey shows that the national incidence of poverty has fallen from 37% in 1998 to 29% in 2002. Even though the economic growth and pro-poor development approach has progressed substantially over the decade, the benefit of poverty reduction and rate of decline and incidence of poverty varies greatly across the country. Some regions and some population groups have gained more than the others. The northern region is the poorest among the nine regions in Viet Nam. The project provinces are in the northern region. Son La province was the third poorest provinces in the northern region with a poverty head count of 71.4%. The decline in poverty in urban areas has been greater, declining at nearly twice the rate of rural areas. The Government is now preparing a new cycle of targeted poverty reduction programs. The Government also has increased budget allocations to targeted programs associated with poverty reduction in the poorest provinces.

The high share of households reported to use electricity as a main source of lighting suggests that poor households are connected. The share of poor households reported to use electricity as a main source of lighting in the project areas ranges from 75% to 95%. The cost of connection is a barrier for many poor households to use electricity. The ratio of rural to urban beneficiaries is about 1:4. This means that the majority of project benefits will accrue to urban areas, where poverty incidences are generally lower. However, with strong rural-urban links, increasing urban migration (particularly of females who make up an increasing proportion of migrants), and remittances, indirect impacts in terms of employment and income of the project are expected to benefit some households in rural areas.

The level of electricity consumption is normally strongly correlated with income. This is mainly because as household incomes rise, affordability of appliances increases. Poor households, thus, consume smaller amounts than nonpoor. The very poor often are limited to using one or two light bulbs, and sometimes an electric fan. Among the poorest households in Viet Nam with access to electricity, electricity accounts for less than 2% of their total spending. This is low compared with other countries in the region. Consumption levels range from 2 kWh per month for the very poor to around 20–30 kWh for the poor just below and above the poverty line. The near-poor and poor just below the poverty line have some affordability of appliances, and might even have a TV. Of the poorest income quintile, 17% reported having a color TV. However, these appliances, while cheap in terms of capital costs, are secondhand and inefficient in electricity usage, and thus are more expensive to run. Despite these low consumption levels, electricity is a priority for poor households. This is reflected in the fact that they are willing to sell an animal, depleting their savings, to pay for up front connection charges. Thus, the value of just a few kWh of electricity consumption in terms of enhancing the quality of life is large from the household perspective. Most households use electricity for domestic activities such as lighting, water pump, TV, and radio. Very few of the poor use electricity for own-business activities. Access to the grid also has large expenditure-reducing effects for poor households, and allows them to become more energy efficient, using fewer kWh.

However, in rural areas electricity services are not always reliable and of good quality. This is due to the rapid expansion of the electricity network, poor local network management, and poor and long wiring from the pole to the house in rural areas. High losses and inadequate power supply remain a burden for many of the connected rural consumers. Unreliable services and voltage fluctuations reduce some of the benefits of electricity. First, electricity usage for income-earning activities in agriculture and small-scale commercial activities are adversely affected with a consequent loss in income. Second, voltage fluctuations reduce the lifespan of appliances and increase the cost of using electricity. This will deter consumers from purchasing appliances and using electricity optimally.

In urban areas, the requirement of formal registration cards is a key barrier for poor informal migrants, often from rural areas, to connect directly to Electricity of Viet Nam's (EVN's) services. This has created a market for "middle-men", or meter landlords, who buy electricity from EVN and onsell to end-consumers at higher prices. This depletes the intention of the substantial subsidies on the lowest tariff category. Subsidies in the sector are better able to reach the poor in Viet Nam than in most other countries in the region. This is because of the high connection rates. In urban areas, the poor do not receive the full benefit of subsidies due to the existence of meter landlords. The design of the tariff structure and the overall subsidy level is not particularly pro-poor. Reducing subsidies in the sector and targeting the subsidy to the poor would be important. Affordability of up front charges and monthly charges among the ethnic minorities living in the project area remains an issue. The poverty analysis has been summarized in a Poverty Impact Matrix (Table A13.1).

### C. Participation Process

**Is there a stakeholder analysis?** Yes. Consultations regarding land acquisition and resettlement issues were undertaken with key government officials and the affected people, and will continue during preparation of subprojects. During project implementation, stakeholders and the affected people will participate extensively.

**Is there a participation strategy?** Yes. The Government's Decree 80 (Regulation for Participatory Investment Supervision) and Decree 79 (Grassroots Democracy) encourage community empowerment to undertake supervision and monitoring of investment made in the interest of the community. The gender strategy will facilitate effective implementation of the decrees at the commune level to monitor resettlement activities, HIV/AIDS and trafficking awareness campaign, and condition of labor camp under construction contract.

### D. Gender and Development

#### **Strategy to maximize impacts on women:**

The gender analysis includes households affected by land acquisition. In Viet Nam, while the Land Law provides for equal land use and ownership, in reality a number of social and cultural traditions influence access to land by making a distinction between social recognition and legal rights. For the Project, all data collected during the inventory of loss and socioeconomic survey for resettlement planning were gender disaggregated. The socioeconomic survey for the project indicates that male and female households are engaged equally in Government services. However, a higher percentage of women is engaged in trade and sales. More men are engaged in daily labor than women. However, along the Thanh Hoa–Vinh transmission line, a relatively higher portion of women are engaged in construction work. The socioeconomic survey of the project shows that high proportions of poor and vulnerable groups, including female-headed households, live within the subproject areas. In Viet Nam, female-headed households account for 26% of all households. In rural areas, women-headed households constitute 17% of all households, and the female-headed households are vulnerable to shocks. In Son La–Nho Quan and Son La–Soc Son 500 kV transmission line project areas, 16% and 13% of the households are headed by females, respectively. The resettlement plan (RP) indicates that the only permanent land acquisition associated with clearance of the right-of-way is the area of residential and garden land associated with the house or structure to be removed, or if the entire plot is affected because the remaining area is not sufficient to rebuild the house or structure. The inventory of loss (IOL) has identified these effects on an individual household level. The locations of the tower foundations will not be known until the detailed design is complete. Therefore, only the approximate area of agricultural and forest land likely to be needed temporarily, and that to be acquired permanently, is known at this stage. The IOL has aggregated district-level data, and identifies these effects at a provincial level in terms of the amount of agricultural, forest, rural residential, and other land to be affected temporarily or permanently. During the updating of the plan, and once the effects on productive land are known, the measures to support and restore the livelihoods of all severely affected households can be identified in consultation with them. Field observation on the RP on Son LA Hydropower suggests that women often were not consulted on preparation and implementation of the RP. Leaders of the Women Union participated little in the District Resettlement Compensation Management Committee (DRCMC). A separate grievance process on resettlement issues in the commune and district level does not exist. Risks associated with trafficking and HIV/AIDS among the migrant workers in the project areas are identifiable. To ensure participation of women in project activities during implementation of the RP and social support program, the following measures are

included in the gender strategy. Budget required to implement the gender strategy is included in the project costs.

**Gender Strategy:**

- At the inception of the Project, a capacity building training program will be designed for the women commune leaders from the affected commune, with priority given to the women from ethnic minority households. The training also will include male commune leaders and representatives of the mass organizations. The training will include information and awareness on the resettlement activities of the Project. The awareness and leadership skill training will enhance women's participation at the commune level in resettlement-related discussions and commune investment supervisory groups under Decree 80 (Regulation on the assignment of sale, business contracting, and lease of state companies) and Decree 79 (Regulation on the exercise of democracy in communes). Capacity building training also will be provided to the leaders of the Women's Union to increase their participation in DRCMC;
- The DRCMC will include women representatives from the District Women's Union to represent the interest of women and women-headed households from the affected households. At the commune level, specific resettlement committees will be formed to discuss the RP of the Project. Specific strategies will be developed to encourage women, ethnic minorities, and poor households to participate in resettlement planning and implementation;
- During the IOL, men and women from the households will participate in the discussion of IOL. At the village, hamlet, and commune-level discussion for preparation and implementation of the RP, separate meetings will be held with the women from the affected households and female-headed households to determine (i) the impacts on the productive land, (ii) problems related to relocation and temporary relocation of house, and (iii) the additional measures or specific assistance that are required to address the needs of the women-headed households and women from the affected households;
- DRCMC and commune leaders will consult separately with the women-headed households and women from the households losing more than 10% of their productive land to identify the assistance required in terms of selection of sites for productive land, extension services, training, and capital support required to restore their livelihood;
- The RP of the Project includes a socioeconomic support program with a focus on women, specifically women-headed households, women and men from poor households, and vulnerable groups. Specific attention will be paid to (i) restoring economic activities of the women from garden land; (ii) providing women in the new settlement area access to existing agriculture extension and microcredit and financial services; and (iii) establishing links with a marketing facility and relevant technical assistance, as required;
- RP will include joint registration of land use rights in the names of husband and wife in instances where households are allocated alternative agriculture and/or residential land;
- Attention to complaints and grievances made by women, ethnic minorities, and poor households;
- The HIV/AIDS and trafficking awareness campaign will involve women's union, youth union, health workers, and women community leaders;
- Women as well as men from severely affected poor households will be prioritized for employment-related civil works for the transmission lines;
- As per the Labor Code (as amended in 2002), all employment for the subproject will respect Government commitments to gender equity including (i) employment targets for women, as relevant to ethnic minorities; (ii) ensure that no child labor will be used; (iii) no discrimination against the employment of qualified women; and (iv) no differential wages paid to men and women for work of equal value;
- Disaggregated monitoring indicators by gender and ethnic groups will be developed for management information system;
- Gender sensitization training for relevant staff from EVN and Northern Power Project Management Board (NPPMB), members of the Provincial Resettlement Steering Committee, DRCMC, and commune leaders.

**Has an output been prepared?**

Yes, a gender strategy has been prepared (see above).

A national consultant on gender and development will be included in the consulting services for turning the gender issues into an implementation plan. The training subjects and social impact monitoring indicators are included in Supplementary Appendix E.

| Item                                      | Significant/<br>Non-significant/<br>None   | Strategy to Address Issues  | Plan Required   |
|---|--|---|---|
| <b>Resettlement</b>                       | <input checked="" type="checkbox"/> Significant<br><input type="checkbox"/> Not significant<br><input type="checkbox"/> None | <p>A resettlement action plan (RAP) has been prepared for the components that have undergone a feasibility study.</p> <p>A resettlement framework has been prepared to guide the preparation of a RAP for the other components that have not undergone a feasibility study.</p>   | <input checked="" type="checkbox"/> Full<br><input type="checkbox"/> Short<br><input type="checkbox"/> None   |
| <b>Indigenous Peoples</b>                 | <input checked="" type="checkbox"/> Significant<br><input type="checkbox"/> Not significant<br><input type="checkbox"/> None | <p>In the communes of the project area, the proportion of ethnic minority households ranges from 60% in Phu to 100% in Son La. The ethnic minority groups include the Muong and Thai, H'mong, Dao, Kho Mu, and Sinh Mun. The impact of this Project on ethnic minority groups is through land acquisition. RPs have been prepared for the two transmission lines. Each plan contains sections on ethnic minority socioeconomic characteristics, as well as impacts on land acquisition.</p>   | <input checked="" type="checkbox"/> Yes<br>Ethnic minority special action is included in the RP in the gender strategy<br><input type="checkbox"/>  |
| <b>Labor</b>                              | <input type="checkbox"/> Significant<br><input checked="" type="checkbox"/> Not significant<br><input type="checkbox"/> None | <p>In the construction campsite, labor standard will be maintained and basic facilities will be provided. Appropriate child care facilities in construction campsites for women laborers will be provided. Employment will be provided for the poor ethnic minority groups for construction work. No trafficked or child labor will be used for construction and maintenance. To ensure access to social-economic support program an ethnic minority special action is included in the RP.</p>  | <input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> No specific plan is prepared. However, gender strategy includes labor issues; construction contract award will include mitigation measures on labor               |
| <b>Affordability</b>                      | <input type="checkbox"/> Significant<br><input checked="" type="checkbox"/> Not significant<br><input type="checkbox"/> None |   | <input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> No  |
| <b>Other Risks and/or Vulnerabilities</b> | <input type="checkbox"/> Significant<br><input checked="" type="checkbox"/> Not significant<br><input type="checkbox"/> None | <p>The displaced might not fully restore their livelihood. The poor households from various ethnic groups might become more vulnerable during relocation and land acquisition. During project construction, temporary labor camps can increase demand for sex workers for the construction workers, which can increase the potential of trafficking of girls and women from the surrounding communities or from the project affected people, those who are more vulnerable to trafficking. High risks groups for HIV/AIDS in the core project area are the traders, seasonal migrants, drug users, and sex workers. The construction process can pose risks for the construction workforce and the communities.</p> | <input type="checkbox"/> Yes<br><input checked="" type="checkbox"/> Socioeconomic support programs are included in the RP plan. The awareness program on HIV/AIDS and trafficking is included in the project's civil works contracts. |

**Table A13.1: Poverty Impact Matrix**

| Channel      |                      | Type of Effect  |  |   | Major Groups Affected                         | Risk/Assumption  |
|--------------|----------------------|---|--|---|---|--|
| General      | Specific             | Direct  | Indirect   | Macroeconomic   |   |  |
| Labor Market | Employment           |   |  |   |   |  |
|              | Formal Sector        |   | Increased labor demand by industry and commercial sector                   | Increased labor demand resulting from economic growth   | Semiskilled and skilled labor                 | <b>Assumption</b><br>Investments by new and existing enterprises<br><b>Risk</b><br>Lack of semiskilled and skilled labor   |
|              | Informal sector      |   | Increased income-earning opportunities and possible increased labor demand | Increase income-earning opportunities and increased labor demand resulting from economic growth | Mainly unskilled labor                        | Good environment for small-scale businesses and access to capital resources  |
| Prices       | Electricity          | Reduced need for tariff increases with improved efficiency in the sector  |  |   | All consumers                                 | <b>Assumption</b><br>Direct connections, e.g., no meter landlords  |
| Access       | Electricity services | Increased connections   |  |   | All new consumers, residential poor consumers | <b>Assumption</b><br>Ability to meet up front costs  |
|              |                      | Improved access to quality services   |  |   | All consumers                                 | <b>Assumption</b><br>Improved local management and investments in distribution network upgrading in rural areas.<br>Ability to meet cost of quality wiring from pole to house. |
| Transfers    | Private              |   | Increased remittances  |   | Rural poor and nonpoor households             | <b>Risk</b><br>Decrease labor demand   |
|              | Public               | Reduced transfers as efficiency enhancements of the project reduces cost of supply, e.g., narrowing of the gap between tariffs and cost of supply |  |   | Government and population at large            |  |
|              |                      | Increased transfers due to new connections.   |  |   |   | New consumers  |

Source: Asian Development Bank estimates.

## **SUMMARY ENVIRONMENTAL DUE DILIGENCE OF SON LA AND HUOI QUANG HYDROPOWER PROJECTS**

### **A. Environmental Due Diligence Objectives and Projects Overview**

#### **1. Environmental Due Diligence Objectives**

1. In 2002, the Prime Minister approved the Hydropower Development Master Plan on the Da River as part of the Fifth Power Development Master Plan for development of several hydropower cascades, including the (i) 1,950-megawatt (MW) Hoa Binh Hydropower Project, which was completed in 1994; (ii) 2,400 MW Son La Hydropower Project (SLHPP) on the Da River; and (iii) 560 MW Huoi Quang Hydropower Projects (HQHPP) on the Nam Mu tributary. Environmental due diligence was undertaken to determine what gaps exist—and, if so, how significant they are—between the environment impact assessments (EIA) and environment management plans (EMP) prepared for implementation under the SLHPP and HQHPP and the Government's and international best practices for EIAs and EMPs.

#### **2. Overview of Son La and Huoi Quang Hydropower Projects**

2. Due to the large hydropower potential on the Da River in the northwestern region, and its benefits to the Red River delta region, the SLHPP was approved by the Ninth National Assembly's resolution as a national priority project to (i) supply electricity for industrialization and modernization of Viet Nam; (ii) contribute to flood control during the rainy season, and supply water for irrigation during the dry season in the Red River Delta; and (iii) support the socioeconomic development of the northwestern region. The construction began in 2004 with access roads, diversion channels, and coffer dams. The Prime Minister granted special approval to start the works, even though the refinements to the feasibility study (FS) and the final EIA are not done. The EIA is to be completed and submitted to the Ministry of Natural Resources and Environment (MONRE) by the end of 2005.

3. The HQHPP is on one of the two cascades on the Nam Mu River, a first level tributary on the right bank of the Da River. It has been studied as part of the Master Plan for Da River Hydropower Cascades, and was approved by the Prime Minister in 2002. HQHPP's FS-phase EIA was submitted to MONRE's in February 2005. It was granted conditional approval subject to a list of revisions to be made before construction. Electricity of Viet Nam (EVN) is making these revisions.

### **B. Environmental Management Plan of SLHPP**

4. Several versions of the EIA prepared for SLHPP did not include an EMP as defined by the Government's EIA guidelines for hydropower projects. Six technical annexes have been prepared for individual environmental factors, such as water resources, soil environment, geology and topography, biodiversity, and socioeconomic environment. These annexes describe baseline conditions, predict impacts, and recommend mitigation and monitoring measures. Although the measures in these individual studies cover most of the relevant topics for hydropower projects, they lack information on institutional arrangements and cost estimates. Before completing that main EIA report, the mitigation and monitoring measures recommended in the individual technical annexes need to be consolidated into a single set of discrete measures for the Project to avoid, or minimize, the significant environmental impacts in the most cost-effective way. Ideally, these measures will be incorporated into a formal EMP with specific schedule, budget, and institutional arrangements.

5. In the absence of a formal EMP, as the final EIA report of SLHPP is still being prepared, an agreement was reached that EVN will begin preparing an EMP for immediate implementation. Asian Development Bank (ADB) has reviewed the EMP, and made recommendations to improve as well as suggestions on the institutional arrangements for its implementation. EVN has allocated staff and a budget of \$200,000 for the implementation of the EMP in the first year. EVN also requested ADB assistance in building its capacity to prepare, monitor, implement, and update the EMP regularly as construction progresses. The capacity building also will include upstream and downstream impact mitigation measures. ADB technical assistance (TA) for \$800,000 is being formulated to assist EVN in these matters.

### **C. Environmental Management Plan of HQHPP**

6. Chapter VI of the FS EIA focuses on EMP, presenting budget information on mitigation and monitoring measures for (i) reservoir cleanup, (ii) demining operations, (iii) restoration of land use, (iv) climate and hydrology monitoring, (v) air monitoring, and (vi) fish and aquatic organism monitoring. A budget of \$725,500 has been allocated for these items. In general, the mitigation measures proposed in the EIA for HQHPP cover the relevant topics, although they are relatively vague and would need to be more site-specific. The institutional arrangements and responsible agencies for the implementation of mitigation measures also need to be spelled out clearly. Although this does not meet the ADB's requirement, Viet Nam's guidelines on hydropower EIA do not specifically require such information.

7. The monitoring activities given in the EIA are considered adequate, detailed, and specific in terms of the parameters required, number of monitoring points, frequency, and cost estimates, as well as the institutional arrangement for implementation. This section could be improved by providing maps that show the monitoring points for each parameter. Suggestions have been given to EVN for incorporation when finalizing the EIA. The monitoring program can be considered adequate in meeting ADB's and Viet Nam's requirements.

### **D. Field Observations of Environmental Impacts and Mitigation and Monitoring Measures for SLHPP and HQHPP**

8. The SLHPP dam construction has not started. The dam will be 135 meters (m) high, topping out at 228 m above mean sea level. The construction has begun on the diversion channel, which will be 90 m wide, 857 m long, and 12 m below current (dry season) river surface level. The main channel is excavated mostly to design depth, with construction focusing on leveling the rocky bottom to accommodate a concrete base and excavating a deeper channel to take dry season flow. Dikes are being built across the river at the site of the future power station. The diversion channel and dikes will be finished by the end of 2005, and the power station will be completed in 2008.

9. Several roads have been constructed, traversing very steep mountainsides. As such, the construction involves removing large volumes of earth and rock to make way for the road, as well as to create stable embankment faces in the hillsides above the roads. It was possible to traverse only a sampling of the site and vicinity roads. In general, the roads appear to be well designed in terms of grade and slope of cut faces, though they could be improved through basic forms of drainage, erosion control during and after construction, and revegetation. A two-lane bridge has been built across the river below the dam. Two more bridges are planned within 2–3 kilometer (km) downstream of the dam.

10. The Department of Natural Resources and Environment (DONRE) in Son La Province stated that construction of a biological wastewater treatment plant for domestic sewage, and a landfill for domestic solid waste disposal, started recently at the campsite that houses 5,000 workers. In the interim, pit latrines have been built for the construction workers.

11. About 4 million cubic meters (m<sup>3</sup>) of material has been excavated, including 1 million m<sup>3</sup> for the diversion channel. As expected for so much earth removal in the river channel, siltation was apparent in the river. However, in the absence of baseline data or documents in English, comparing the sediment load of the Da River downstream of the dam with upstream sections, or with the river before the construction began, is difficult. Road construction and especially swidden agriculture (slash and burn on steep slopes), which are prevalent in the region, contribute significantly to runoff, erosion, and sedimentation of the rivers.

12. Construction has not started for the proposed HQHPP site, although it is envisaged to begin in 2006. Similar to the Son La construction site, the reservoir area can be described as a steep-walled valley with limestone pinnacles protruding from earthen hills. The natural mountain has subtropical vegetation, and has been removed or impacted significantly throughout the area by slash-and-burn agriculture on the steep upper slopes, and rice paddies on the lower slopes and in the valley bottoms. A few small Thai villages are along the road. As in Son La and elsewhere in the region, road construction in and near the towns appears almost continuous, with extensive disturbed area left unpaved and unvegetated. Streams appear to be carrying a high sediment load, though samples were not taken. Very little, if any, wild animal life was observed, though domesticated animals were omnipresent. Nonetheless, the valley is aesthetically very appealing.

## **E. Recommendations**

13. EIAs of the hydropower plants should be consolidated with environmental assessments for associated actions, including roads, and resettlement actions to provide comprehensive results to the Government for better policy decisions.

14. A cumulative EIA should be performed. SLHPP and HQHPP projects meet the criteria for a cumulative assessment based on ADB's *Environmental Assessment Guidelines*. The SLHPP project would benefit from a full-scale, basin-wide, cumulative assessment. This was discussed with EVN and MONRE, while the Government requested ADB assistance to undertake a cumulative assessment to follow the current project EIA. An ADB TA for \$900,000 is being formulated to assist MONRE and EVN in building its capacity to undertake such assessments.

15. Additional recommendations include

- (i) Prepare and implement an EMP for SLHPP and HQHPP based on Government's EIA guidelines on hydropower projects.
- (ii) Appoint a full-time environmental monitor in the field for SLHPP.
- (iii) Involve MONRE in the implementation of hydropower project EMPs, with oversight responsibility beyond EIA approval and into the EMP implementation.
- (iv) Develop laws requiring preparation and implementation of EMPs for all HPP projects, irrespective of financing source.
- (v) Build institutional capacity of DONREs to oversee EMP implementation.
- (vi) Build capacity of River Basin Organizations to oversee EMP implementation.

## SUMMARY SOCIAL DUE DILIGENCE OF SON LA AND HUOI QUANG HYDROPOWER PROJECTS

### A. Introduction

1. The Government of Viet Nam is financing the 2,400 megawatt (MW) Son La Hydropower Project (SLHPP) and 560 MW Huoi Quang Hydropower Project (HQHPP). About 96,000 people will have to be relocated as a result of these two hydropower projects. The Asian Development Bank (ADB) engaged the Government in policy dialogue on resettlement and compensation in the context of processing the Northern Power Expansion Sector Project. The Government agreed to have ADB undertake due diligence with several objectives: (i) determine the status of resettlement planning and implementation of the two hydropower projects, (ii) determine if resettlement planning and implementation complies with Government laws and regulations, (iii) identify outstanding issues and gaps between planning and implementation and Government's policies, (iv) assess any gaps between implementation and international best practices in safeguard policies, and (v) recommend ways to improve resettlement planning and implementation to meet Government's standards.

2. In this context, meetings were held with representatives of Electricity of Viet Nam (EVN); members of Son La Hydropower Project Management Board (SLHPPMB); Huoi Quang Project Management Board (HQPPMB); officials from the provincial, district, and commune people's committees (PPC, DPC, and CPC, respectively) of Son La, Lai Chau, and Dien Bien provinces; representatives from the provincial and district resettlement committees (DRC); party cells; National Institute of Agricultural Production and Projection (NIAPP); and Ministry of Agriculture and Rural Development (MARD).

3. Field visits, observations, interviews, and discussions with commune and village officials, affected households, and host communities at the pilot resettlement sites and proposed resettlement sites were carried out. Semi-structured questionnaires also were utilized in gathering information. Details of the due diligence are in Supplementary Appendix E.

### B. Legal and Policy Framework

4. **Prime Minister Special Decision 459/QD-TTg.** For SLHPP, the Prime Minister issued Decision No 92/QD-TTg, dated 15 January 2004, approving \$686 million for the resettlement and compensation associated with SLHPP. In 12 May 2004, the Prime Minister issued Special Decision 459/QD-TTg, based on the Decree 22/1998/CP, which provides policies on resettlement and compensation, as well as lessons learned from the resettlement pilot sites in Tan Lap and Muong Chum communes (Son La Province) and Siphaphin commune (Dien Bien Province). The general principles of special decision are to ensure that (i) the standard of living of the affected population is restored and improved, and housing and income is better than at the former site; (ii) equal benefits of relocatees and host communities to maintain social harmony; (iii) relocation sites provide adequate production land for affected population, and that providing production land is prioritized; and (iv) compensation and assistance are carried out democratically, transparently, and effectively.

5. Special Decision 459/QD-TTg presents advancement in terms of compensation payment for various losses, as it is based on replacement cost or current market value at the time of compensation payment. Unlike Decree 22/1998, which provides land for nonlegal users on a case-by-case basis, Special Decision 459/QD-TTg provides replacement land and assistance regardless of legal status. Furthermore, the affected population will not only receive

replacement land and houses; but also will be entitled to transition allowances (e.g., rice subsidy, moving allowance, health, education, cooking fuel, electricity fees assistance), livelihood and economic programs, and basic services and community infrastructures.

6. Following Special Decision 459, the provinces of Son La, Lai Chau, and Dien Bien issued their respective PPC decisions for preparing and implementing detailed plans for SLHPP. For HQHPP, resettlement planning is continuing, and Lai Chau province also will adopt Special Decision 459 in their issuance of a PPC decision.

7. **Master Plan on Resettlement and Compensation and Detailed Resettlement Plans.**<sup>1</sup> In addition to the Special Decision 459/QD-TTg, the Prime Minister approved the Master Plan on Resettlement and Compensation in November 2004. The master plan was revised and finalized in February 2005, and is now used as a basis for preparing detailed RPs. The master plan provides information about the resettlement areas, as well as general guidelines on the proper and timely preparation and implementation of detailed RPs. The document also stated that further in-depth studies would have to be undertaken, and that the programs need to be adjusted accordingly during detailed planning and implementation to reflect the situations in the resettlement sites, which might require further approval of MARD and PPC.

8. The master plan envisages about 14,993 households will be affected by the SLHPP. However, taking into account 4% population growth to 2010, an estimated 18,897 households (about 90,000 people) will have to be relocated by 2010. The host communities from 83 communes affected by land recovery are estimated at 12,000 households.

9. The master plan noted a number of difficulties and limitations in implementing resettlement programs in the three provinces (Son La, Dien Bien, and Lai Chau): (i) almost all relocatees are ethnic minorities; (ii) the terrain is complex and divided, and land and water are limited; (iii) the area is beset by low productivity of land and absence of markets; (iv) infrastructure is lacking; and (v) training and change of occupations are needed. Nonetheless, the report also presents potential development opportunities from agriculture and silviculture. It indicates that socioeconomic programs of the three provinces are being maintained; that the people have a positive perception of resettlement, as it is conceived as part of the development project that will provide benefits; and that local authorities and host communities are supporting them.

10. The master plan also mentioned the respective roles and responsibilities of MARD and the PPCs in preparing and implementing detailed RPs. The budget indicated in the master plan is \$686.3 million. EVN will finance 45% (\$308.9 million), while the Government will finance 49% (\$333.3 million). The remaining 6% (\$44.1 million), specifically for investment in livelihood programs (agriculture, animal breeding, and forest plantation programs), will be sourced from the Government's People's Credit Fund. The Ministry of Finance was tasked to manage the investment and prepare annual allocation plan to provincial investors.

---

<sup>1</sup> The Government's Son La Master Plan is equivalent to ADB's Resettlement Framework, while detailed resettlement plans are similar to those of ADB's resettlement plans.

### C. Son La Hydropower Project: Summary of Gaps Between Government's Policies and Implementation at the Pilot Resettlement Sites

11. Before Special Decision 459/Qđ-TTg was issued, PPC's issued decisions pertaining to the relocation of households to the pilot resettlement sites. From 2000 to 2003, 675 relocatees, mostly Thai ethnic minorities, were moved to the three pilot resettlement sites. Some 200 relocatees went to the Siphaphin pilot resettlement site, while 475 relocatees went to the Tan Lap and Muong Chum pilot resettlement sites. Host communities affected by land recovery comprised 143 households from Siphaphin commune, and 770 households from Tan Lap and Muong Chum communes.

12. Due diligence in the three pilot resettlement sites produced common findings. For example, not all provisions as stipulated in the PPC decisions were provided to relocatees and host communities. Some outstanding issues and problems remain at the resettlement sites:

- (i) **Living conditions.** Their living conditions did not improve, and in some instances were worse than the relocatees' former living standards. In the Tan Lap resettlement site, 50 households went back to the reservoir areas to cultivate their former land. Almost all relocatees cannot access land allocated to them, because the land had belonged to host communities that were not compensated for the recovered land. Host communities in Siphaphin commune, whose land was recovered, are experiencing 5–6 months food shortage. Further, the non-compensation to host communities created hostilities and social tensions at the site. Houses of relocatees reportedly were hit at night, and children were bullied in school.
- (ii) **Information disclosure and participation.** The relocatees were not properly informed and not consulted adequately. The host communities were notified only once before land recovery. Details on pricing and timing of the inventory of losses (IOL) and land recovery were not provided to them. Clearing of land by contractors without prior knowledge of host communities led to serious loss of land and crops. In addition, the relocatees or host communities were not represented on the resettlement committees.
- (iii) **Land recovered from host communities.** Land recovered and affected crops and trees from host communities were not recorded properly. As a result, they were not compensated. Host communities in the Siphaphin commune received compensation 2 years after land was recovered. Not all host communities received full payment due to them.
- (iv) **Cash payment for land and other assets.** Some land, crops, and trees were not inventoried because the areas were not accessible. The age of trees also was downgraded. Not all garden land and fishponds included in the inventory were compensated. Unit prices applied for crops and trees were lower than average market prices.
- (v) **Production land.** In Tan Lap, land allocated to relocatees is smaller than what they had before. The productivity of land is also low (one harvest season). An irrigation system is lacking. The affected population finds it difficult to improve the situation and make the land productive. Some relocatees received less land than others due to a shortage at the resettlement sites. In Siphaphin, irrigation that will be operational in June 2005 will benefit only 30% of relocatees. Provincial governments admitted that land is insufficient to allocate for relocatees and host communities.

- (vi) **Residential land, housing, and other facilities at the resettlement sites.** Quality of house construction was poor. Although houses built were patterned on traditional houses, they did not fully incorporate ethnic customs and beliefs. Water supply is also inadequate to meet the demands of the village.
- (vii) **Resettlement allowances.** The rice subsidy provided was insufficient and the livelihood programs implemented was not successful. The land allocated for relocation is small and its productivity low. The cash equivalent of rice subsidy is lower than the local market prices. In Tan Lap, an education allowance was not provided. Cash assistance for moving graves was lower than what was stipulated in the PPC decision.
- (viii) **Livelihood and economic programs.** The livelihood programs carried out were not successful. Cows that were imported from New Zealand died due to different weather conditions and environment. Relocates have no experience in cow breeding, and training and supervision from the company responsible for the program was lacking. For tea growing, tea will take more than 3 years before households can start harvesting produce. Tea land for allocation to relocates who wanted to join the program was inadequate. For bamboo and sugarcane growing, technical know-how on selling the produce was missing, and the market is 40 kilometer (km) away from resettlement site. Relocates have no other sources of income.
- (ix) **Grievance redress.** Complaints or grievances filed by relocates and host communities since 2001 have not been resolved.
- (x) **Ethnic minorities.** Ethnic norms and practices were not given adequate consideration. Changes and livelihood programs were imposed on them. Thus, they are facing difficulties reestablishing their lives.
- (xi) **Implementation arrangements.** The resettlement committees have a limited number of qualified field staff. Son La Provincial Resettlement Committee alone has 60 staff, though most are involved in administration and finance. Most of the fieldwork is done at the district level. The district level staff also do not have experience in implementing resettlement and compensation activities.

#### **D. Huoi Quang Hydropower Project: Status of Resettlement Planning and Implementation**

13. Resettlement planning is continuing. IOL activities are being carried out based on the feasibility study prepared for HQHPP in 2003. Once the IOL is approved, detailed resettlement planning will be carried out. As per feasibility study schedule, construction works will start in January 2006 and will be completed in 2009.

14. The feasibility study (FS) reported that 891 households, mostly Thai ethnic minorities from four communes and two districts, will have to relocate to two resettlement sites in Than Uyen District. Due diligence findings show that the relocates from Muong Kim commune will be relocated within the same commune. However, the proposed site is 12 km away from the affected area (reservoir), on top of a mountain (950 meter high), and inhabited by the Hmong ethnic minorities. Further, the site lacks a water supply system. The Mission was informed that the plan is to develop the water supply and irrigation systems in the area, though the timing of this plan still is being discussed at the DPC and PPC levels. Interviews with affected village leaders and households show that they were informed about the Project and impacts in general, though the details on when and where they will relocate are not known. When the due diligence team discussed the proposed site in Muong Kim, village leaders and affected households stated that they cannot survive in the mountains, because of the cold weather and the absence of a

wetland in the area. They also suggested that they cannot live together with Hmong ethnic minorities at the proposed site. The Hmong ethnic minorities (host communities in Muong Kim) also were interviewed, and they also stated that Thai ethnic minorities cannot live in their area due to the cold climate and the land in their area is not productive. Hmong ethnic minorities stated that they already have a food shortage for 6 months per year.

15. The second resettlement site is at Moug Than Commune, 45 km away from the reservoir along National Road 32. Under the proposal, the relocatees from Moug Kim and Ta Gia communes will be relocated in the site. Hmong and Thai ethnic minorities inhabit the area. Again, the area lacks an irrigation system, and appears not to have any unutilized or unclaimed land. Initial interviews with the host communities stated that they were not consulted on any resettlement planning. They added that they are unwilling to share their land, because they have invested so much in it over the years. The commune chairman from the host communities also reported that the resettlement planning has not been carried out properly, because the resettlement sites selected did not take into consideration the current land use of the area. The sites were selected, the chairman said, solely based from an old land use map.

#### **E. Ongoing Activities, Concerns, and Issues Raised**

16. For SLHPP, the PPC and resettlement committees at all levels acknowledged the outstanding issues and problems at the pilot resettlement sites. They said that the resettlement implementation activities were carried out before the issuance of Special Decision 459/QD-TTg. They added that resettlement is very complex, and they learned a lot from their shortcomings. Son La PPC stated that they are trying to address the problems by convening an appraisal group to assess the problems at the pilot resettlement sites directly. Dien Bien PPC stated that they do not have any plans to address these issues.

17. For the remaining population that will be relocated,<sup>2</sup> the following concerns also were raised: (i) not enough information and lack of detailed studies on land and water availability and sustainability; (ii) poor preparation of the master plan, and inaccurate and inadequate preparation of detailed RPs; (iii) lack of capacity of assigned staff to carry out such complex tasks involving resettlement of thousands of households; (iv) inadequate information on the impacts on host communities that will be affected by land recovery; (iv) Thai ethnic minorities, who are dependent on wetlands and who need to adjust to the new environment; and (v) insufficient information dissemination and consultation. They also recognize that the risk of impoverishment is very high if income restoration and economic programs are not put in place at the resettlement sites. They stated that these programs are crucial for the survival of relocatees and host communities. They added that relocatees are provided with rice subsidies for only 2 years, and that they need to have successful livelihood programs to ensure that they will be able to sustain themselves.

18. In discussions on the plight of the affected population at the pilot resettlement sites, SLHPPMB and EVN indicated that they have no role in resettlement implementation, other than providing 46% of the funds. The responsibility lied with the provinces concerned. They also recognized the limitations of the resettlement committees at all levels due to the complexity of resettlement activities. Further, they noted, the resettlement committees have limited staff and

---

<sup>2</sup> By the end of 2005, Son La Province will start relocating 2,000 households, while Dien Bien Province also is scheduled to relocate 300 households. Relocation activities are expected to be completed by 2009.

experience on resettlement. They added that capacity building is needed, and suggested that ADB provide assistance to the resettlement committees for the implementation activities.

19. For HQHPP, the PPC and DRC concurred with the due diligence findings that the proposed sites are unacceptable and require careful and detailed studies. The quality of the draft IOL report is poor. It lacks consultation with relocatees and host communities, and requires proper identification and assessment of impacts and planning of proposed sites. The DRC also emphasized the need for sustainable livelihood programs. The DRC also mentioned that they do not have enough qualified staff to carry out resettlement planning and implementation, and that training and capacity building are required.

#### **F. Gaps Between ADB's Social Safeguard Policies and Government Implementation**

20. Except on gender issues and monitoring, the Special Decision 459/QD-TTg and PPC decisions adopted for the remaining affected population are very close to ADB's social safeguard policies and requirements. However, due diligence findings show that the main issue is the need to ensure proper implementation of Government policies and regulations. Additional qualified staff clearly are needed. Further, resettlement committees lack the capacity to prepare and implement detailed plans, as well as the Government's plan to accelerate resettlement activities to meet the overall project schedule.

#### **G. Conclusion and Recommendations**

21. Although the Government did not comply fully with their own policy, and did not meet the objectives of improving the lives of the relocatees and host communities at the pilot resettlement sites, the Government acknowledges these outstanding issues under the SLHPP. For example, Son La recently took up measures to address the land shortage issue. Resettlement planning and implementation activities are continuing. Thus, the situation still can be improved and rectified.

22. For the pilot resettlement sites, the failure to address the immediate need for a compatible and culturally appropriate livelihood programs poses the risk that people would be led into more hardships and dire poverty. It would also continue to create hostilities, undermining social cohesion in the area, unless the impacts on host communities are addressed properly.

23. For the remaining affected population in Son La and Huoi Quang HPPs, a similar situation might occur if these issues are not addressed in a timely and effective manner. As such, the Government agreed to a technical assistance (TA) grant for \$1 million to build the capacity of the provincial and district officials in the planning and implementation of RPs, as well as in defining the livelihood programs based on the available resources in resettlement sites. Such a TA is being proposed from the Poverty Reduction Fund to engage international and local experts to assist the Government in addressing the specific recommendations:

- (i) For the Pilot Resettlement Sites (Son La HPP)
  - (a) Undertake detailed investigations to determine actual losses, compensation received, and additional compensation payment and assistance due to relocatees and host communities to be able to address grievances and rectify inadequate compensation for host communities and relocatees.

- (b) Undertake consultations with relocatees and host communities to determine the extent of additional allowances required, such as the provision of additional rice subsidies and provision of fertilizers and seeds to increase productivity of land.
- (ii) For the Remaining Affected Population (Son La and Huoi Quang HPPs)
    - (a) Carefully prepare socioeconomic baseline survey and assessment of impacts, including downstream impacts.
  - (iii) For the Pilot Resettlement Sites (Son La HPP) and Remaining Affected Population (Son La and Huoi Quang HPPs)
    - (a) Design and implement an effective and culturally appropriate livelihood program with full participation of the relocatees and host communities, so that their income and standard of living improve.
    - (b) Set up an effective and culturally appropriate grievance mechanism by establishing permanent grievance offices at the resettlement sites to ensure that people know where to make complaints, and that they will be heard and addressed fairly. Grievance officers must be knowledgeable in dealing with complaints and make all reasonable attempts to resolve issues and complaints at the commune level in a timely and efficient manner through community consultation. As required, nongovernment organizations, mediators, and facilitators, as well as social and resettlement experts will be involved.
    - (c) Make information dissemination, consultation, and participation fully informative, transparent, culturally appropriate, and gender sensitive to relocatees and host communities throughout the life of the Project.
    - (d) Carry out further studies on land availability and capability, and water resources availability and development of irrigation systems to ensure adequate production land, so that all relocatees and host communities can improve their income and standard of living.
    - (e) Establish a mechanism to assist relocatees who might wish to group themselves together and opt to find their own resettlement sites. For example, a small group of five to 10 households might purchase collectively a suitable piece of land, which they have full knowledge of and where the social support system is already in place (i.e., relatives and friends living within the identified area of preference).
    - (f) Set up an effective monitoring system to monitor impacts and implementation issues, so that changes and improvements can be made to meet overall objectives.
  - (iv) For Resettlement Committees
    - (a) Increase the number of provincial and district resettlement committee members, as required, and ensure that the affected population is properly represented in the committees.
    - (b) Undertake training and capacity building to strengthen institutional capability for managing the resettlement, compensation, and economic and livelihood programs.