

**Document of  
The World Bank**

Report No: 17016-VN

PROJECT APPRAISAL DOCUMENT  
ON A  
PROPOSED CREDIT  
IN THE AMOUNT OF US\$ 199 MILLION EQUIVALENT  
TO THE  
SOCIALIST REPUBLIC OF VIETNAM  
FOR A  
TRANSMISSION, DISTRIBUTION AND  
DISASTER RECONSTRUCTION PROJECT  
DECEMBER 5, 1997

Energy and Mining Sector Unit  
East Asia and Pacific Region

## CURRENCY EQUIVALENTS

(Exchange Rate Effective October 20, 1997)

Currency Unit = Dong (D)  
1 D = US\$0.000086  
1US\$ = D11, 600

## FISCAL YEAR

January 1 to December 31

## ABBREVIATIONS AND ACRONYMS

ADB	-	Asian Development Bank
BTP	-	Bulk Transfer Price
BOT	-	Build, Operate, Transfer
DENR	-	Department of Environment and Natural Resources
DSM	-	Demand-Side Management
EIA	-	Environmental Impact Analysis
EI	-	Energy Institute of Vietnam
ERR	-	Economic Internal Rate of Return
ESMAP	-	Energy Sector Management Assistance Program (UNDP-World Bank)
EVN	-	Electricity of Vietnam
HCMCPC	-	Ho Chi Minh City Power Company
GOV	-	Government of Vietnam
JGF	-	PHRD Fund of Japan
LRMC	-	Long-Run Marginal Cost
MOC	-	Ministry of Construction
MOF	-	Ministry of Finance
MOI	-	Ministry of Industry
MPI	-	Ministry of Planning and Investment
MOSTE	-	Ministry of Science, Technology and Environment
OECF	-	Overseas Economic Cooperation Fund of Japan
PPMB	-	Power Projects Management Board (S- for Southern, N- for Northern)
PAP	-	Project Affected Person
PC	-	Power Company
PIP	-	Project Implementation Plan
PVN	-	Petro Vietnam
PIDC	-	Power Investigation & Design Company
RAP	-	Resettlement Action Plan
SIDA	-	Swedish International Development Agency
T&D	-	Transmission and Distribution

Vice President: Jean-Michel Severino Country Director: Andrew Steer Acting Sector Manager: Mohammad Farhandi Task Team Leader: Darayes Mehta
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**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**

**CONTENTS**

	Page No.
<b>Preface</b>	<b>i</b>
<b>A. Project Development Objectives</b>	<b>1</b>
1. Project Development Objectives and Key Performance Indicators	1
<b>B. Strategic Context</b>	<b>1</b>
1. Sector-Related CAS Goal Supported by the Project	1
2. Main Sector Issues and Government Strategy	2
3. Sector Issues to be Addressed by the Project and Strategic Choices	3
<b>C. Project Description Summary</b>	<b>5</b>
1. Project Components	5
2. Key Policy and Institutional Reforms Supported by the Project	5
3. Benefits and Target Population	6
4. Institutional and Implementation Arrangements	6
<b>D. Project Rationale</b>	<b>7</b>
1. Project Alternatives Considered and Reasons for Rejection	7
2. Major Related Projects Financed by the Bank and/or Other Development Agencies	8
3. Lessons Learned and Reflected in the Project Design	8
4. Indications of Borrower Commitment and Ownership	8
5. Value Added of Bank Support in This Project	9
<b>E. Summary Project Analyses</b>	<b>9</b>
1. Economic	9
2. Financial	10
3. Technical	10
4. Institutional	11
5. Social	12
6. Environmental Assessment	13
7. Participatory Approach	13
<b>F. Sustainability and Risks</b>	<b>13</b>
1. Sustainability	13
2. Critical risks	13
3. Possible Controversial Aspects	14

<b>G. Main Credit Conditions</b>	<b>14</b>
1. Effectiveness Conditions	14
2. Other	14
<b>H. Readiness for Implementation</b>	<b>17</b>
<b>I. Compliance with Bank Policies</b>	<b>17</b>
<b>J. Disaster Reconstruction Component</b>	<b>17</b>
<b>Attachment to PAD</b>	<b>19</b>
<b>Annexes</b>	
Annex 1. Project Design Summary	23
Annex 2. Detailed Project Description	28
Annex 3. Estimated Project Costs	33
Annex 4. Cost-Benefit Analysis Summary	37
Annex 5. Financial Summary for Revenue-Earning Project Entities	46
Attach. 1. Review of Financial Management Systems	55
Attach. 2. Action Plan for Improving Financial Management Systems	59
Annex 6. Procurement and Disbursement Arrangements	63
Table A. Summary of Procurement Arrangements	64
Table B. Thresholds for Procurement Methods and Prior Review	65
Table C. Allocation of Credit Proceeds	66
Attach. 1. Procurement Plan	67
Attach. 2. Procurement Monitoring Group	84
Annex 7. Project Processing Budget and Schedule	86
Annex 8. Documents in the Project File	87
Annex 9. Statement of Loans and Credits	88
Annex 10. Country at a Glance	90
Annex 11. Status of Power Sector Reforms	92
Annex 12. Power Sector Policy Statement	95
Attach. 1. Action Plan for Institutional Reform	99
Map. IBRD No. 29172	

**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**

**Project Appraisal Document**

**East Asia and Pacific Region**  
**Energy and Mining Sector Unit**

<b>Date:</b> December 5, 1997	<b>Country Director:</b> Andrew Steer
<b>Task Team Leader:</b> Darayes Mehta	<b>Sector:</b> Energy (Power)
<b>Project ID:</b> VN-PE-45628	
<b>Lending Instrument:</b> Specific Investment Loan	<b>PTI:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

<b>Project Financing Data</b>	<input type="checkbox"/> Loan	<input checked="" type="checkbox"/> Credit	<input type="checkbox"/> Guarantee	<input type="checkbox"/> Other [Specify]	
<b>For Loans/Credits/Others:</b>					
<b>Amount (US\$m/SDRm):</b>	199/144.4				
<b>Proposed Terms:</b>	<input checked="" type="checkbox"/> Multicurrency	<input type="checkbox"/> Single currency			
Grace period (years): 10	<input checked="" type="checkbox"/> Standard Variable	<input type="checkbox"/> Fixed <input type="checkbox"/> LIBOR-based			
Years to maturity: 40					
Commitment fee: 0.5%					
Service charge: 1.0%					
<b>Financing plan (US\$m):</b>					
	Source	Local	Foreign	Total	
Government		0.0	0.0	0.0	
Swedish International Development Agency (Ha Tinh S/S)		0.0	13.0	13.0	
Swedish International Agency (DSM) - grant		0.0	3.6	3.6	
IDA					
a) Transmission and Distribution Component		0.0	189.0	189.0	
b) Disaster Reconstruction Component		0.0	10.0	10.0	
ADB (Regulatory Study) - grant		0.1	0.7	0.8	
Borrower's Internal Sources and Local Borrowing		115.6	0.0	115.6	
<b>TOTAL</b>		<b>115.7</b>	<b>216.3</b>	<b>332.0</b>	
<b>Borrower:</b>	The Socialist Republic of Vietnam.				
<b>Guarantor:</b>					
<b>Responsible agencies:</b>	Electricity of Vietnam (EVN), Ho Chi Minh City Power Company (HCMCPC), Power Company 1 (PC1), Power Company 2 (PC2), and the Ministries of: Industry (MOI); Science, Technology and Environment (MOSTE); and Construction (MOC)				
<b>Estimated disbursements (Bank FY/US\$m):</b>	1998	1999	2000	2001	2002
Annual	5.0	100.0	69.0	15.0	10.0
Cumulative	5.0	105.0	174.0	189.0	199.0
<b>Expected effectiveness date:</b>	March 1998		<b>Closing date:</b> June 30, 2002		



## **Preface**

This Project Appraisal Document (PAD) combines two distinct components: (a) the Transmission and Distribution component which was developed under the name "Transmission and Distribution Development Project", over the period June 1996 to October 1997; and (b) the Disaster Reconstruction component which was developed in November 1997, in response to Government's request to IDA for assistance in the reconstruction of the severe damage caused by Typhoon Linda that struck Vietnam on November 3, 1997. The Disaster Reconstruction Component is presented separately in Section J (Attachment to PAD, pages 19 to 22).





## **A. Project Development Objectives**

### **1. Project Development Objectives and Key Performance Indicators (see Annex 1):**

The Project's main development objectives are to: (a) strengthen the high voltage transmission network in Vietnam to facilitate evacuation of power from generating stations to the load centers; (b) rehabilitate and expand distribution systems to meet demand, reduce losses and improve reliability; (c) support power sector reform and restructuring through: (i) the separation of "transmission" and "generation" functions; (ii) the implementation of regulatory reforms; (iii) the introduction of tariff reforms; and (iv) exploring financing of distribution from diversified sources; and (d) support institutional strengthening and commercialization through: (i) securing greater autonomy for the distribution companies; and (ii) introducing planning capabilities for demand-side management (DSM).

## **B. Strategic Context**

### **1. Sector-Related Country Assistance (CAS) Goal Supported by the Project (see Annex 1):**

The Project is consistent with the Bank's Country Assistance Strategy (CAS, discussed at the Board on October 25, 1995; and a progress report reviewed by the Executive Directors on December 23, 1996), which emphasizes support for infrastructure development including power. In regard to the power sector, the CAS sees IDA's role to be: (a) filling an important niche not covered by other players in the sector (this refers to financing of "transmission" and "distribution" expansion and rehabilitation, and environmentally and socially sustainable hydropower development for which private capital is not expected to come forth); (b) facilitating private investments in power "generation" by strengthening the legal and regulatory framework for the power sector; and (c) removing institutional bottlenecks by strengthening the sector institutions, and through commercialization, moving them towards a more market based operation. The Project is also consistent with the Bank's power sector policy which advocates efficiency, restructuring and reforms. It supports the aforementioned three main objectives by supporting:

- (a) investments in infrastructure to facilitate: (i) evacuation of power from generating plants in the center of Vietnam to the heavy load centers in the south; (ii) supply of power to the heart of the country's major commercial center, Ho Chi Minh City; and (iii) demand growth and reliability/efficiency improvements in power distribution in three major cities, Halong, Vinh and Vung Tau;
- (b) power sector reforms through: (i) the separation of "transmission" and "generation" functions of EVN; (ii) technical assistance leading to implementation of regulatory reforms; (iii) the implementation of bulk supply tariffs between the "transmission" entity and "distribution" companies; and (iv) raising the retail tariffs to meet the sector's overall financial objectives;
- (c) commercialization and institutional development through: (i) strengthening the financial management systems of the sector entities; (ii) seeking greater autonomy for the distribution companies and exploring equitization of distribution operations; and (iii) introduction of a national DSM program.

## 2. Main Sector Issues and Government Strategy:

The main sector issues and the Government's strategy to respond to these issues are outlined below (for an update on the Energy Sector see Bank's Energy Sector Investment, Institutions and Policy Review - 1998, **Annex 8**):

### Large Sector Investments

1. To sustain an economic growth projection of about 9% p.a. over the next 5 years, Vietnam needs to increase its electricity supplies at the rate of about 15% p. a., calling for an investment of about US\$6 billion equivalent over the period 1997-2002 (about 5% of the projected GDP). The Government has defined a broad strategy to raise sector financing, including: (a) increasing and structuring electricity tariffs to raise internally generated surpluses and curb demand; and (b) involving the private sector in power "generation" and natural gas exploitation. The two ongoing IDA Credits (2724-VN and 2820-VN) require: (a) progressive tariff increases to a level of US¢7/kWh by 1999, which the Government is complying with; and (b) construction of a gas-fired power plant through a Build Operate Transfer (BOT) arrangement, for which solicitation documents have been issued. IDA, ESMAP and IFC are providing extensive technical assistance for the development of private power and strengthening the oil and gas sector. (see **Annex 11** for status of power sector reforms).

### Grossly Inadequate Transmission and Distribution Infrastructure

2. The transmission and distribution (T&D) systems in Vietnam are old, overstretched and inefficient. Distribution losses range from 15% to 30%, while supply reliabilities are poor. With the occurrence of substantial hydropower resources in the north and center and heavy power demands in the south, the country needs a strong North-Center-South high voltage transmission backbone. The Government is well aware of the sector's T&D needs and of the almost US\$0.7 billion annual investment requirement of the sector it has earmarked about US\$250 million for T&D. Recognizing that investment in T&D is as important as, if not more than, investment in generation, both IDA's ongoing Credits provide for substantial rehabilitation and expansion of the T&D systems.

### Steady but Slow Pace of Power Sector Reform and

### Managerially and Administratively weak Sector Entities

3. In spite of major structural changes introduced by the Government in 1995 which created EVN and 34 separate business units, there remain several impediments to a commercialized operation of the sector, notably: (a) absence of a forthright policy and strategy for further sector reforms; (b) lack of a commercial arms-length ownership policy *vis-à-vis* EVN, in terms of financial responsibilities and operational performance; (c) hesitancy in unbundling "transmission" from "generation"; (d) little financial and management autonomy at the level of the distribution companies; and (e) absence of mechanisms for diversified participation in "distribution". The Government is continuing the reform process to move from a centrally planned economy to one which is more market-based and IDA is providing substantial technical assistance in this direction; however, the pace of reforms is slow and needs to be accelerated to meet the ever burgeoning growth of the sector.

4. In addition to the need for strengthening the sector structure, there is a need for strengthening EVN and its entities in administrative and management practices. This is being addressed in substantive measure under IDA's Credit 2820-VN which provides for a significant training component.

*Lack of an Independent and Transparent Regulatory Regime*

5. The current regulatory system for the power sector suffers from two specific drawbacks: (a) the function of government oversight and regulation is not separated from that of sector ownership and management which have been vested in EVN's Management Board; and (b) there is no effective and credible body of sector-specific legislation and regulations. The Government is giving due importance to achieving transparent arms-length economic regulation and with ESMAP assistance, it is currently engaged in the drafting of an Electricity Law and the development of an institutional mechanism to perform the regulatory functions.

*The Need to Improve Demand-Side Efficiency in addition to Supply-Side Efficiency*

6. While there is a growing awareness of the need for and benefits of Demand-Side Management (DSM) in government and electric utility circles, there has been very limited application of energy efficiency measures and other DSM activities in Vietnam. There is a lack of: (a) trained personnel that can design, implement, monitor and evaluate DSM programs; (b) consumer information regarding energy-efficient equipment; and (c) appropriate incentives to construct energy-efficient commercial buildings. In addition, there is very limited energy end-use data available in the country. By implementing all available cost-effective DSM measures, Vietnam can help alleviate pressure to install new generation and transmission capacity by reducing peak demand and electricity consumption, which is commensurate with the country's development objectives. To help address these issues, an assessment for DSM was accomplished under IDA Credit 2724-VN.

**3. Sector Issues to be Addressed by the Project and Strategic Choices:**

The Project addresses the aforementioned main sector issues as follows:

*Large Sector Investments*

1. In providing IDA funds of US\$199 million, and catalyzing funding of about US\$17 million from other bilateral sources, the Project would help contribute in some measure to the large financing requirements of the sector. The Project is also expected to encourage other donors to provide T&D investments in other parts of Vietnam.

*Grossly Inadequate Transmission and Distribution Infrastructure*

2. In financing the 500 kv transmission investments, the Project would directly strengthen the North-Center-South transmission backbone; in addition, the Project would contribute substantially to improving power distribution in four major cities - Ho Chi Minh City (Nha Be - Tao Dan system), Halong, Vinh and Vung Tau.

*Steady but Slow Pace of Power Sector Reform and*

*Managerially and Administratively weak Sector Entities*

3. The Project addresses sector reform issues through: (a) acquiring a clear statement from the Government of its medium-term Power Sector Policy (**Annex 12**); and (b) requiring implementation of an Action Plan for Institutional Reform (**Annex 12, Attachment 1**) which includes: (i) definition and subsequent implementation of steps towards separation of EVN's "transmission" function from its "generation" function and operation of "transmission" as a profit center; (ii) implementation of cost-based bulk supply tariffs for wholesale electricity sales to the distribution companies, based on the recommendations of the National Tariff Study (**Annex 8**); (iii) issuance of separate corporate charters for each distribution company providing for increased operational and management autonomy; (iv) creating a distinct staff function for distribution management at the level of EVN Deputy Director General with overall responsibility for the distribution companies; (v) implementation of a finance and commercial organization structure within each distribution company; and (vi) equitization of one or more operating units of its distribution companies on a pilot basis.

*Lack of an Independent and Transparent Regulatory Regime*

4. The Project addresses regulatory issues through a technical assistance (see **Annex 2**) which includes: (a) preparation of the detailed regulatory criteria and procedures to regulate the power sector (covering investment and financial criteria, and reliability and performance criteria for the different power sector entities); (b) defining and developing the analytic and administrative procedures to perform regulation (covering financial and economic evaluation models, detailed manuals and guidelines); and (c) training of staff who would be performing the regulatory functions. The Action Plan for Institutional Reform (**Annex 12**) includes: (a) preparation and subsequent promulgation of an Electricity Law; (b) preparation and subsequent promulgation of secondary legislation; and (c) formation of a separate unit to perform regulatory functions.

*The Need to Improve Demand-Side Efficiency in addition to Supply-Side Efficiency*

5. The DSM component of the Project provides for the implementation of a phased DSM Action Plan (**Annex 2**) to capture opportunities for cost-effective electricity savings in all sectors and end-use applications. This Action Plan would remove barriers to cost-effective energy conservation and efficiency by: (a) building institutional capacity and experience to design, implement, monitor and evaluate DSM programs through pilot programs and training; (b) developing a DSM policy framework; and (c) introducing minimum efficiency standards for electrical appliances and new commercial buildings.

**C. Project Description Summary**

**1. Project Components (see Annex 2 for a Detailed Description and Annex 3 for a Detailed Cost Breakdown):**

<u>Project Component</u>	<u>Category</u>	<u>Cost Incl. Contingencies (US\$M)</u>	<u>% of Total</u>	<u>IDA-financing (US\$ m)</u>	<u>% of IDA-financing</u>
<b>Transmission &amp; Distribution Comp.</b>					
(a) Pleiku-Phulam 500 kV Transmission Line and associated Substations	Physical	164.5	51.6	102.5	54.2
(b) Ha Tinh 500 kV, 450 MVA Substation	Physical	16.0	5.0		
(c) 220 kV Nha Be-Tao Dan circuit and Tao Dan Substation	Physical	56.0	17.5	45.0	23.8
(d) Rehabilitation of Distribution Networks in Halong, Vinh and Vung Tau	Physical	62.5	19.6	39.5	20.9
(e) Consulting Services for (a) and (c)	Implm. Assist.	2.0	0.6	2.0	1.1
(f) Technical Assistance for:					
(i) Regulatory Framework	Instit. Dev.	0.8	0.3		
(ii) Demand Side Management	Inst. Bldg.	4.5	1.4		
(g) Interest during Construction		12.7	4.0		
	<b>TOTAL</b>	<b>319.0</b>	<b>100.0</b>	<b>189.0</b>	<b>100.0</b>
<b><u>Associated Technical Assistance Component</u></b>					
Transmission/Distribution Functions (funded by JGF Grant, US\$0.7 mln.)	Project Preparation (Institutional Reform)	0.7			
<b>Disaster Reconstruction Comp.</b>	Physical	<b>13.0</b>	<b>100.0</b>	<b>10.0</b>	<b>100.0</b>

**2. Key Policy and Institutional Reforms Supported by the Project:**

The Project supports the following key policy and institutional reforms:

- (a) Separation of EVN “transmission” from “generation” and operation of “transmission” as a profit center.
- (b) Implementation of cost-based bulk supply tariffs for wholesale electricity sales to the distribution companies.
- (c) Increasing operational and management autonomy for distribution companies and creating a commercialized organizational structure.
- (d) Equitization of one or more operating units of the distribution companies on a pilot scale.
- (e) Preparation of detailed regulatory criteria and procedures for regulating the power sector; preparation of an Electricity Law and secondary legislation; and formation of a separate unit to perform regulation.

- (f) Building institutional capacity and developing a DSM policy framework and a national program.

### **3. Benefits and Target Population:**

Development of the power sector is crucial for the economic upliftment of Vietnam. The Project would assist the country in realizing its planned GDP growth rates. Implementation of the Project's physical components would contribute significantly towards stable and efficient operation of the power system. The Project has crucial sector reform and institution building components which would contribute to: (a) restructuring of the sector's main entity, EVN, making it more efficient, and strengthening the regulatory framework making it more conducive to private investments; and (b) securing greater autonomy for the distribution companies moving them towards commercialization, and strengthening the planning and design capabilities of the sector entities in several important areas. The Project's technical assistance components would pave the way for sound development of the country's transmission systems as well as efficient utilization of its electric energy. The Project would benefit the population of Vietnam in general and the populations of Ho Chi Minh City and Vung Tau in the south and Halong and Vinh in the north, in particular.

### **4. Institutional and Implementation Arrangements:**

Implementation period: The Project would be implemented over a period of 5 years, 1998 to 2002.

Executing agencies: EVN would be the executing agency for the 500 kV transmission components and HCMCPC for the 220 kV transmission component, while the distribution companies PC1 (Halong and Vinh) and PC2 (Vung Tau) would be the executing agencies for the distribution components of the Project. MOI would be the executing agency for: (a) the Regulatory Framework component with the assistance of EVN; and (b) the DSM component with the assistance of EVN, and with the assistance of MOSTE and MOC for establishing the energy-efficient standards for equipment and commercial buildings.

Project coordination: EVN would be responsible for overall coordination of the Project.

Project oversight (policy guidance, etc.): The Ministry of Finance (MOF) and the Ministry of Planning and Investment (MPI) will supervise project financing and advise EVN on all financing matters. MOI will oversee the implementation of: (a) EVN restructuring and reforms in the transmission and distribution sectors; and (b) the DSM component. The Office of the Prime Minister will provide policy guidance to all entities.

Accounting, financial reporting and auditing arrangements: EVN's accounts are audited by independent financial auditors, Deloitte Touche Tohmatsu, who are acceptable to IDA. The audit is conducted in accordance with international auditing standards and in compliance with the independent auditing regulations of Vietnam. The audit includes a review of EVN's accounting system and internal control and covers a full audit of the consolidated financial statements (balance sheet, income statement and sources and applications of funds statement) of EVN, and the special account (SA) related to the IDA Credits. The report of the audit would be furnished to IDA no later than June 30 of each fiscal year. An evaluation of EVN's Financial Management System and an Action Plan for improving this system are given in **Annex 5**.

**Monitoring and evaluation arrangements:** Satisfactory procedures for monitoring the progress of the Project in terms of physical execution, environmental and social aspects and financial reports have been agreed with EVN which would furnish quarterly progress reports. An Implementation Completion Report (ICR) would be drafted by IDA with EVN's assistance not later than six months after completion of the Project. EVN would also prepare a plan for the operational phase of the Project, and together with IDA, define the performance indicators to be used to monitor operations and development impact. EVN would also prepare and make available to IDA its own evaluation report, including a summary report which would be attached unedited to the ICR.

Project supervision would focus on: (a) performance indicators; (b) compliance with financial covenants; (c) implementation of environmental impact mitigation measures and resettlement/compensation; (d) physical construction; (e) institutional restructuring and sector reform; and (f) technical assistance components. Supervision expertise would comprise: power engineering, economics, financial analysis, environmental and social issues, restructuring and privatization, DSM and legal aspects. Two missions annually for a period of 4 years are foreseen, with total estimated staff-weeks (sw) inputs (on the basis of sharing with other Vietnamese power projects) of: (a) power engineer, economist and financial analyst -- 12 sw; (b) environmental specialist -- 4 sw; (c) social scientist -- 4 sw; (d) sector reform and restructuring specialist and legal expert -- 12 sw; and (e) DSM experts -- 12 sw. The IDA Resident Mission would play an active part in project supervision.

#### **D. Project Rationale**

##### **1. Project Alternatives Considered and Reasons for Rejection:**

Each investment component of the Project has been developed following technical and economic studies that have taken into consideration environmental and social aspects as appropriate. The 500 kV Pleiku-Phulam line provides the means for transporting power from central hydropower stations (which form part of the least cost generation expansion program) to the south. It has a net present value (NPV) of US\$95.8 million compared to the next best alternative of transporting power at 220 kV. The line follows a route that involves minimum environmental and social impacts. Likewise, distribution of power in north-central Vietnam from the 500 kV Ha Tinh substation has an NPV of US\$7.3 million compared to the next best alternative of bringing power to the area from the 220 kV system in north Vietnam. The 220 kV Nha Be - Tao Dan system which brings power to the center of the heavy demand areas of Ho Chi Minh City has been designed with particular reference to environmental and social considerations, utilizing expensive underground feeder and substation systems in highly congested areas. It is the only viable alternative for meeting the demands in this area and has an NPV of US\$125.9 million compared to the scenario when this project component is not undertaken and alternative developments are adopted. The rehabilitation of the distribution networks under the Project in the cities of Halong, Vinh and Vung Tau has been long overdue; without these projects the supplies in these cities would deteriorate seriously and no new consumers could be connected. The improvements in reliability and losses that these components would achieve would result in high economic benefits even when the foregone benefits are very conservatively evaluated. The NPVs of these project components are US\$21.9 million (Halong), US\$17.3 million (Vinh) and US\$17.9 million (Vung Tau), compared to the scenarios when these components are not undertaken and alternative developments are adopted.

**2. Major Related Projects Financed by the Bank and/or Other Development Agencies (Completed, Ongoing and Planned):**

<u>Sector issue</u>	<u>Project</u>	<u>Latest Form 590 Ratings</u> (Bank-financed projects only)	
		<u>IP</u>	<u>DO</u>
<u>Bank-financed</u>			
Improving technical, operational, managerial and sectoral efficiency.	Power Sector Rehabilitation and Expansion Project (CR 2724-VN of July 11, 1995).	S	S
Rationalizing power sector institutions, commercializing operations of sector entities, initiating an appropriate legal and regulatory framework, initiating private sector participation in generation, investigating DSM and energy conservation options, and preparing a rural electrification program.	Power Development Project (CR 2820-VN of February 26, 1996).	S	S
<u>Other development agencies</u>			
Asian Development Bank.	Power Distribution Rehabilitation Project (LN 1358 of June 8, 1995)		

**3. Lessons Learned and Reflected in the Project Design**

IDA's first two operations in the power sector are under implementation and lessons learned have been reflected in the project design. The most significant problem has been that of procurement delays; this would be addressed by streamlining bid evaluation procedures and appointing a Procurement Monitoring Group (see **Annex 6, Attachment 2**) to monitor procurement activities. An important lesson has been the need for the preparation of detailed RAPs with a clear definition of project affected persons and the legal framework for resettlement, and assuring the active participation of the affected people in the RAP. Early attention to this matter has resulted in RAPs that have exhaustively dealt with all issues of concern. Another significant lesson is the need to appoint consultants as early as possible, due to the lengthy approval process in Vietnam. Early employment of consultants is being programmed. Feasibility studies for individual project components have to undergo several screening stages, and this has caused delays in project start. Approval of all feasibility studies for the Project has been accomplished. Finally, the Financial Management Systems of EVN and the PCs have been weak; the Project calls for an Action Plan for substantially strengthening these systems (see **Annex 5, Attachment 2**).

**4. Indications of Borrower Commitment and Ownership.**

The Project's physical components have been identified by EVN as priority components in the development of Vietnam's power sector in a balanced manner and command EVN's full ownership and commitment. They have the support of MOI and MPI and the approval of the



Government. EVN has fully complied with IDA's requirements in regard to the preparation of the PIP, EIA and RAPs and has confirmed deployment of adequate staff resources and counterpart funds for successful implementation of the Project. The Project's reform and institutional development components have evolved through IDA's ongoing dialog with MOI, EVN and the Government and are designed to support the Government's objectives of restructuring, commercialization and corporatization of the power sector. The MOI has reaffirmed its commitment to sector reform through its updated Policy Paper and acceptance of the Action Plan for Institutional Reforms. Overall, therefore, the Borrower's and the implementing agencies' ownership of and commitment to the Project are assessed to be strong.

## 5. Value Added of Bank Support in this Project.

IDA involvement in Vietnam's power sector is intended to assist Vietnam's staged transition to a commercialized sector structure and operating environment. This involvement, commenced under the first two power credits, is helping Government in: (a) strengthening the existing institutions; (b) implementing commercial management practices and structures; (c) initiating development of a credible legal and regulatory system; and (d) facilitating the entry of private capital and operators in the sector. In addition, IDA's involvement is influencing the optimal utilization of scarce resources, as well as fostering energy efficiency and good environmental management practices. IDA's sustained involvement in the Vietnamese power sector, through the proposed Project, is necessary to help consolidate and maintain the momentum of reform efforts and institutional restructuring initiated in earlier projects.

Vietnam's need for investment in the transmission sub-sector is large, averaging almost US\$250 million p.a. over the next 6 years. The proposed Project would meet an important need to improve the performance of Vietnam's integrated power grid through extensive reinforcement of its transmission network. The Project would also contribute to enhancing efficiency through: (a) rehabilitation and reinforcement of distribution networks; and (b) introducing DSM in the power sector. Finally, in addition to regulatory reforms and commercialization of the sector entities, the Project would help introduce diversified financing sources in distribution, setting the stage for foreign direct investment in this, hitherto unexplored, sub-sector.

### E. Summary Project Analysis (Detailed assessments are in the project file. See Annex 8):

1. Economic (see Annex 4): [X] Cost-Benefit Analysis :	NPV (US\$ mln)		ERR (%)
	10% DCR*	12%DCR	
(a) 500kV Pleicu-Phulam Line	95.8	72.2	30.5
(b) 500 kV Ha Tinh Substation	7.3	5.9	41.5
(c) 220 kV Nha Be Tao Dan System	125.9	92.6	27.6
(d) Halong Distribution	21.9	15.8	24.8
(e) Vinh Distribution	17.3	12.3	22.9
(f) Vung Tau Distribution	17.9	12.2	20.5
(g) Whole Project	286.1	211.0	27.2

\* DCR = Discount Rate

**2. Financial (see Annexes 4 and 5):**

	NPV (7%DCR) (US\$ mln.)	FRR (%)
(a) 500kV Pleiku-Phulam Line	85.7	12.0
(b) 500 kV Ha Tinh Substation	15.6	21.0
(c) 220 kV Nha Be Tao Dan System	59.9	15.8
(d) Halong Distribution	2.1	8.3
(e) Vinh Distribution	10.3	13.5
(f) Vung Tau Distribution	13.6	16.9
(g) Whole Project	187.2	13.3

EVN's financial performance to date has been satisfactory. Its first year of operation is 1995, when the accounts of the three formerly fully integrated power companies, PC1, PC2 and PC3 ( which were responsible for generation, transmission and distribution in the North, South and Center of Vietnam, respectively), were consolidated into the accounts of EVN. A summary of the consolidated (generation, transmission and distribution) financial performance and key financial indicators are presented in **Annex 5**. Projections of EVN's financial performance during FY97-00 and the assumptions underlying these projections are also presented in **Annex 5**. The financial projections show that with reasonable tariff adjustments in FY97-99 and allowing EVN to accumulate profits and build up its cash reserves, its projected financial results would be satisfactory and would allow reasonable financing of future investment from internal sources.

The past financial results and projections of future performance of HCMCPC, PC1 and PC2 are also presented in **Annex 5**. The financial statistics show that HCMCPC, PC1 and PC2 had reasonably acceptable results of operations. Provided that appropriate actions, including but not limited to adjustment of retail tariffs, are taken, the financial projections indicate that: (a) sufficient revenues could be realized from future operations to cover all operating and maintenance expenses, including depreciation; and (b) enough internal funds could be generated to finance a reasonable proportion (30%) of the investment programs.

An Action Plan for strengthening the Financial Management System is presented in **Annex 5, Attachment 1**.

**3. Technical:**

All physical components of the Project are based on detailed feasibility studies undertaken by the concerned entities of EVN with assistance on least-cost planning and economic aspects from the National Energy Institute in Hanoi and the Southern Energy Institute in Ho Chi Minh City. These feasibility studies have been approved by the Government. International consultants will be employed under the Project to assist EVN in engineering, detailed design and bid documents for the 500 kV and 220 kV transmission system components. A bilaterally funded international consultant is also assisting EVN in preparing the bid documents for the rehabilitation of the distribution systems. The cost estimates for all components have been based on uptodate figures available with EVN and for some of the equipments, assistance has been sought from international consultants currently working on other projects in Vietnam. The technical design of the Project is considered to be sound.

#### 4. Institutional

##### *a. Executing agencies:*

The executing agencies for the project will be EVN, HCMCPC, PC1, PC2, MOI, MOSTE and MOC. EVN, created in 1995 by government decree as a state corporation under the State Enterprise Law, is an independent legal entity acting as holding company overseeing various business units. EVN's organization consists of: (a) a Management Board which is responsible for setting up policy and providing advice to EVN's top executives; (b) a Board of Directors implementing the Management Board's decisions and carrying out day to day management; and (c) business units consisting of 14 independent and 22 dependent accounting member units. The organizational structure of EVN is highly centralized in terms of operational decision-making.

EVN is under the direct supervision of the MOI, the former Ministry of Energy, but the Management Board is authorized under its Charter and by the State to carry out ownership and control functions on its behalf. The accountabilities arising from EVN's mandate as set out in its Charter and the Regulation of Powers Between EVN and Affiliated Companies, however, is not clearly established and formalized. While EVN has some degree of commercial autonomy, the authority for tariff setting, total borrowing, foreign currency transactions, investment program approval, and company purchasing rests with the Government. Within EVN, management control and decision-making reflect primarily a "top down" centralized approach.

The PCs were established in July 1995 at the same time that the assets and liabilities of PC1 and the Hanoi Power Company on the one hand, and PC2 and the Ho Chi Minh City Power Company, on the other, were transferred. PC1 and PC2 also divested their generating stations to EVN. The distribution operation in the north of Vietnam is divided into the Hanoi Power Supply Company, covering Hanoi, and PC1 covering the rest of the former PC1 area. Similarly, PC2 was divided into the HCMC PC for Ho Chi Minh City, and PC2 covering the rest of the former PC2's area. Although the PCs are nominally subsidiaries of EVN, they are independent in so far as their operations, including planning, construction and operation of distribution facilities are concerned. The PCs are financially independent accounting business units and are responsible for their viability.

##### *b. Project management:*

EVN has submitted a Project Implementation Plan as required by IDA (see **Annex 8**). Management, implementation and monitoring of project activities would be carried out by EVN for the 500 kV transmission, HCMCPC for the 220 kV transmission, and PC1 and PC2 for distribution. Implementation of the 500 kV Pleiku-Phulam transmission line will be managed by the Southern Power Project Management Board (SPPMB), which was established by EVN on June 28, 1995 and charged with the responsibility for implementing all transmission projects above 35 kV in the south. This Board is headed by a Chairman, assisted by two deputies, and has a staff of 179 persons distributed in eight functional sections (Planning, Technical, Financial, Environment, Resettlement, Logistics, Materials Storage, Consultancy Services and International Cooperation). The staff of SPPMB have experience in managing large transmission projects, notably the 1,768 km long, 500 kV North-Center-South link which was completed in record time. A separate dedicated Project Manager (assisted by specific staff from the functional sections) will be appointed for managing the project component. Technical assistance by

international consultants would be provided for detailed design and project management. Implementation of the 500 kV Ha Tinh substation component will be managed by the Northern Power Projects Management Board (NPPMB), which is similarly constituted as the SPPMB and would be organized to handle the project component in a similar manner as for the 500 kV Pleiku-Phulam transmission line. HCMCPC will be responsible for implementing the 220 kV Nha Be - Taodan overhead cum underground system. Its staff is not experienced in underground high voltage cable (beyond 22 kV) and GIS substation work, and for this technical assistance would be provided by international consultants in detailed design and project management. A separate dedicated Project Manager (assisted by specific staff from the functional sections) will be appointed for managing the project component. PC1 and PC2 will have overall responsibility for managing the distribution rehabilitation components. These are large, well-staffed organizations, which have long experience in handling distribution projects. The organizational set up at the headquarters of PC1 (in Hanoi) and PC2 (in HCMC) will undertake procurement work. Detailed planning, design and construction of the distribution networks would be undertaken by the Provincial Power Service companies of Halong, Vinh and Vung Tau, each of which would appoint a dedicated Project Manager for the job. The aforementioned project management arrangements are acceptable to IDA. To speed up procurement decisions, a Procurement Monitoring Group would be appointed to monitor all procurement activities and liaise closely with the IDA Resident Mission in Hanoi.

Technical assistance components will be managed as follows: (a) Regulatory Framework - MOI and EVN; (b) Demand-Side Management - MOI with the assistance of EVN, MOSTE and MOC; and (c) Strengthening the Transmission and Distribution Functions - EVN with oversight by MOI.

## **5. Social:**

EVN has prepared detailed Resettlement Action Plans (RAPs) for each component of the Project following the Bank's resettlement guidelines. The RAPs have been prepared in consultation with the affected persons and the provincial and district authorities. They provide adequate budgets for resettlement and compensation, and include adequate institutional arrangements and mechanisms for implementation monitoring and grievance redress. These RAPs have been approved by the concerned People's Committees and MOI (under authorization from the Government) and are acceptable to IDA. The project entails land acquisition and resettlement impacts due to construction of new lines and substations. The 500 kV Pleiku Phulam transmission line will affect about 591 households, of which 508 will need to be relocated and 83 will need to be rearranged. About 1,000 households will lose a small portion of their farmland due to transmission line towers. A few ethnic minority households would be affected by the transmission line; however, because of the relatively minor nature of the impact, no separate Indigenous People's Development Plan is considered necessary. The 500 kV Ha Tinh substation comprises extensions in the existing substation plot and does not affect any persons. The 220 kV Nha Be - Tao Dan project component will affect about 122 households, of which 11 will need to be relocated, and the remaining will need to be compensated for land acquisition. The rehabilitation of distribution networks will affect: (a) in Halong about 10 households of which one will need to be relocated and the rest compensated; (b) in Vinh about 288 households, of which about 10 will need to be relocated and the rest compensated; and (c) in Vung Tau about 78 households, all of which will only need to be compensated.

**6. Environmental Assessment:** Environmental Category  A  B  C

EVN has provided an Environmental Impact Analysis (EIA) for the 500 kV Pleiku-Phulam Line and associated substations. This has confirmed that the line will not affect any ecologically sensitive areas and will be constructed in an environmentally acceptable manner. EVN will follow well established practices for mitigating the environmental impact of line construction. The rehabilitation of distribution networks in the cities of Halong, Vinh and Vung Tau and the construction of the Nha Be - Tao Dan underground 220 kV transmission system do not pose any significant environmental impacts. The temporary impacts during construction would be eliminated through proper reinstatement.

<b>7. Participatory Approach:</b>	Identification/Preparation	Implementation	Operation
Beneficiaries/community groups	CON	COL	COL
Local governments	CON		
Affected persons	CON		

**F. Sustainability and Risks:**

**1. Sustainability.**

The following key factors are critical to Project Sustainability:

**Institutional:** Continued: (a) Government commitment to its power sector reform proposals and; (b) EVN management commitment to implement restructuring and granting autonomy to distribution companies, and to DSM.

**Financial:** Government commitment to periodically review and adjust tariffs.

**Technical:** (a) High standards and quality of transmission line, substation and distribution system construction; and (b) proper maintenance of the facilities constructed under the Project.

**Environmental and Social:** (a) Consultation with affected persons during; and (b) independent monitoring and evaluation during and after Project implementation completion.

**2. Critical Risks (reflecting assumptions in fourth column of Annex 1):**

**Project Outputs to Development Objectives**

<u>Risk</u>	<u>Risk Rating</u>	<u>Risk Minimization Measure</u>
Non - timely availability of counterpart funds which could lead to implementation delays.	Moderate	Agreement with Government to provide local cost financing in case the concerned entities are unable to do so.
Waning of EVN, HCMCPC, PC1, PC2 management commitment to deploy adequate resources for timely Project completion.	Low	Close monitoring by the Resident mission in the early stages of the Project to ensure adequate deployment of teams to work on the Project.
Waning of Government commitment to	Moderate	Effective IDA engagement.

push with reforms and of EVN commitment to institutional strengthening programs.

Lack of EVN commitment and/or ability to implement effective DSM programs and policy framework.

Moderate

Close monitoring of DSM progress and supervision reports as well as technical assistance activities provided by international consultants.

**Project Components to Outputs**

Lack of resources for land procurement.

Moderate

Advance action in land procurement.

Inadequate procurement resources, slow procurement decisions.

Appreciable

Proactive monitoring of procurement by the Resident Mission. Appointment of a Procurement Monitoring Group to ensure procurement decisions are made in a timely manner

Delays in appointment of consultants; inadequate consultant inputs or poor consultant performance for the technical assistance components of the Project.

Moderate

Selective consultant appointment process and intensive supervision of consultants' work by EVN, the Government and IDA.

Appointment of a Government oversight committee to ensure coordination of studies.

Overall project risk rating:

Moderate

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**3. Possible Controversial Aspects Nil.**

**G: Main Credit Conditions**

**1. Effectiveness Conditions**

The following will be the conditions of effectiveness of the proposed IDA Credit:

1. Execution of subsidiary loan agreements between the Borrower and EVN, HCMCPC, PC1 and PC2, and delivery of the legal opinion to IDA.
2. Finalization of the co-financing arrangements with ADB for the Regulatory Framework study grant.

**2. Other Sector Regulatory/Institutional Action**

**Agreements reached with EVN, HCMCPC, PC1 and PC2:**

Accounts/Audits:

1. EVN, HCMCPC, PC1 and PC2 shall appoint independent auditors, acceptable to IDA, and make the audit reports available to IDA within six months after the close of each fiscal year.

Monitoring, Review and Reporting:

1. EVN, HCMCPC, PC1 and PC2 shall: (a) carry out satisfactory procedures for monitoring the progress of the Project in terms of physical execution and financial reports, and agreed performance monitoring indicators; (b) furnish to IDA: (i) quarterly progress reports, 10 days after the end of each calendar quarter; and (ii) annual integrated reports, on or about December 31 in each year; (c) review with IDA by February 28 of each year, the annual report, and, thereafter take all measures required to ensure the efficient completion of each component of the Project and the achievement of the objectives thereof, based on the conclusions and recommendations of the said report and IDA's views; and (d) submit to IDA, on or about October 1, 2000 a report integrating the result of monitoring and evaluation activities till that date and thereafter carry out a mid-term assessment of Project implementation for the period ending December 31, 2000.

2. EVN shall: (a) make available to IDA its evaluation of the Implementation Completion Report (ICR) prepared by IDA; and (b) adopt a plan for the operational phase of the Project.

3. EVN shall prepare and furnish to IDA for its review and comment its proposed Power Development Program (PDP) by December 31, 1998. Thereafter, EVN shall no later than December 31 in each succeeding year, submit to IDA for its review and comment: (a) a report of the progress in the implementation of the PDP during the preceding 12 month period; (b) its proposed implementation program for the succeeding 5 years; and (c) a review of its policy and levels of its electricity tariffs, including proposed adjustments.

Financial Performance:

1. EVN, HCMCPC, PC1 and PC2 shall take all actions to ensure that funds generated from internal sources would be equivalent to not less than 30% of the annual three-year average of their capital expenditures.

2. EVN, HCMCPC, PC1 and PC2 shall maintain internally generated cash at the level of 2.0 times their total estimated debt service requirements.

3. EVN, HCMCPC, PC1 and PC2 shall review with IDA their proposed annual budgets and financial plan for each succeeding three year period.

4. EVN, HCMCPC, PC1 and PC2 shall take out and maintain with responsible insurers, or make provision satisfactory to IDA for insurance against such risks and in such amounts as shall be consistent with appropriate practice.

Management Aspects of the Project:

1. EVN shall: (a) introduce by January 1, 1999 accounting procedures for phased increase in cost-based bulk supply tariffs; (b) prepare and furnish to IDA no later than June 30 in each year a report on the levels of such tariffs as so determined; and (c) implement phased cost-based bulk supply tariffs for wholesale electricity sales to its distribution companies, reaching at least 85% of the bulk supply tariff by 1999 and 100% of such tariff by 2000.
2. Following the technical assistance for the Transmission and Distribution Functions, EVN shall: (a) no later than December 31, 1998 submit to IDA for review and comment an action plan for the separation of its transmission and generation functions and the creation of its transmission function as a separate profit center and, thereafter, implement said plan taking into account IDA's comments and in accordance with a time table acceptable to IDA; and (b) no later than December 31, 1999, establish its transmission function as a separate profit center in a manner acceptable to IDA.
- 3.. EVN shall: (a) no later than September 30, 1998 issue revised corporate charters for each of HCMCPC, PC1 and PC2, acceptable to IDA, which charters shall provide for increased operational and management autonomy for these companies; (b) no later than January 1, 1999, adopt and implement a financial and commercial structure acceptable to IDA (including strengthening the Financial Management Systems according to an action plan defined in **Annex 5, Attachment 1**) for each of its power distribution companies (HCMCPC, Hanoi Power Company, PC1, PC2 and PC3); (c) no later than April 1, 1998, create a distinct staff function for distribution management within EVN at the level of EVN Deputy Director General, with overall responsibility for the power distribution companies; and (d) no later than January 1, 1999, or such later date as IDA may agree, prepare and adopt a plan (based on the findings of the JGF funded technical assistance study), satisfactory to IDA, for the equitization of one or more operating units of its power distribution companies in a manner satisfactory to IDA
4. EVN shall: (a) no later than April 1, 1998, under terms of reference satisfactory to IDA, establish a DSM Cell with competent staff in adequate numbers; and (b) assist MOI in carrying out the DSM component in accordance with a time bound action plan acceptable to IDA.

Environmental and Resettlement Aspects:

1. EVN shall construct the 500 kV Pleiku Phulam transmission line taking into account the environmental impact mitigation measures outlined in the Environmental Impact Analysis, and without any limitation thereto, shall take timely action to ensure that any adverse environmental impact is effectively mitigated in a manner satisfactory to IDA. EVN, HCMCPC, PC1 and PC2 shall carry out the resettlement and rehabilitation of affected persons in accordance with the Resettlement Action Plans for each part of the Project, in a manner satisfactory to IDA.

**Agreements Reached with the Borrower:**

Flow and Utilization of Project Funds:

1. The Borrower shall relend the Credit amount to EVN, HCMCPC, PC1 and PC2 under subsidiary loan agreements between the Government and the respective entities under terms and conditions approved by IDA which shall include: (a) interest at a rate of 6.5% p.a.; (b)



repayment over 20 years, including grace period of 5 years; and (c) foreign exchange risk to be borne by EVN, HCMCPC, PC1 and PC2.

Management Aspects:

1. The Borrower's MOI shall implement the technical assistance for the Regulatory Framework, and following its completion it shall define and implement steps to reform the regulatory regime according to an Action Plan acceptable to IDA. This shall include: (a) a time table for preparation of the Electricity Law and Supplementary Legislation; and (b) creation of a separate unit for performing regulatory functions.
2. The Borrower shall take all necessary steps to raise average retail tariffs, according to a progressive schedule satisfactory to IDA, to a level of US¢7.0/kWh in 1999.
3. The Borrower shall by June 1, 1998 appoint a Procurement Monitoring Group to monitor all project procurement activities and liaise with the IDA Resident Mission.
4. The Borrower shall, through MOI, with the assistance of EVN, MOSTE and MOC: (a) by September 30, 2000: (i) establish energy efficiency standards for lighting and motors; and (ii) an energy efficiency building code for commercial buildings; (b) by December 30, 1999, prepare and implement a pilot load management program in at least 50 buildings; and (c) carry out the DSM component of the Project in accordance with a time-bound action plan acceptable to IDA, and shall no later than June 1, 1998, employ consultants, under terms of reference acceptable to IDA.

**H. Readiness for Implementation.**

The project implementation plan has been appraised and found to be realistic and of satisfactory quality.

The feasibility studies for all project components have been completed. Consultants for the 500 kV and 220 kV systems are expected to be appointed by March 1998. The engineering design documents for: (a) the 500 kV and 220 kV transmission components of the project are under preparation; and (b) the distribution rehabilitation components of the project have been prepared.

Bids are expected to be invited progressively starting March 1998.

**I. Compliance with Bank Policies**

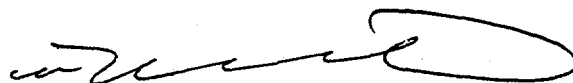
This project complies with all applicable Bank policies.

**J. Disaster Reconstruction Component (see Attachment to PAD, pages 19 to 22)**

*Darayes Mehta*

**Task Team Leader: Darayes Mehta**

**Acting Sector Manager: Mohammad Farhandi**



**Country Director: Andrew Steer**

## Attachment to PAD

### J. Disaster Reconstruction Component

#### Background

Typhoon Linda that struck southern Vietnam on November 3, 1997 was the most severe to hit the country in a century. Latest estimates compiled by the Disaster Management Unit appointed by the Government indicate the extent of damage as follows: (a) nine provinces affected; (b) 452 people killed and 3,800 missing; (c) 76,537 houses and 2,250 school rooms destroyed; (d) 3,126 boats sunk; and (e) 358,000 hectares of paddy destroyed. Damage to the electrical distribution network assessed by the Power Company, PC2, is estimated at US\$13 million equivalent, with destruction of: (a) 180 km of low voltage distribution lines; (b) 160 km of medium voltage distribution lines; and (c) 320 distribution transformer substations, aggregating in capacity to 25 MVA, and disruption of supply to about 100,000 consumers.

In response to Government's request for financial and technical assistance, IDA has agreed to provide resources for reconstruction in four areas: (a) reconstruction in education, health, and rural roads by accelerating disbursements under existing credits (Nos. 2548-VN, 2807-VN and 2929-VN); (b) inclusion of components for rebuilding of sea dikes, sluice gates and restoration of mangroves - after detailed examination - under two Credits currently being prepared; (c) utilization of existing credit lines in the Rural Finance Project (Credit 2855-VN) for fishing boats, aquaculture, etc.; and (d) reconstruction of the distribution network, as an added component under this Credit.

#### Objectives and Description

The main objective of this project component is to help normalize economic activity in the typhoon affected areas through the reconstruction of the electricity distribution network in such areas. A detailed assessment of the damage has been done by PC2 and this has been reviewed and verified to the extent feasible, by IDA's Resident Mission staff through site visits to the affected areas. Reconstruction and restoration efforts have already been started by PC2 and have accomplished: (a) largely - temporary, make-shift, propping up of distribution lines and substations; and (b) some - permanent reconstruction by diverting equipment and materials from other projects and depleting spare parts inventory. Some parts of the network have still to be reconstructed. Overall, the project component involves reconstruction of: (a) 180 km of low voltage distribution lines; (b) 160 km of medium voltage distribution lines; and (c) 320 distribution transformer substations, aggregating in capacity to 25 MVA. The area of devastation comprises the nine provinces of: Ca Mu, Kien Giang, Bac Lieu, Soc Trang, Tra Vinh, Ben Tre, Tien Giang, Baria-Vungtau and Bin Thuan.

#### Implementing Arrangements

The project component will be implemented by PC2, which is the implementor of the Vung Tau Distribution Rehabilitation component of the main Transmission and Distribution project. PC2 has established a separate ad-hoc Project Implementing Unit (PIU), comprising the Director General of PC2 as the chairman, and Directors of the Provincial Power Services as members. The PIU, assisted by staff from the various departments of PC2, would be responsible for preparation of bidding documents, bid evaluation and recommendation of awards. A

Construction Supervision Group has been established in each of the nine provinces to supervise and monitor implementation. Actual construction will be undertaken by the provincial and headquarters staff of PC2, which has vast experience in works of this nature. The project component is expected to be implemented over a period of 18 months, December 1997 to June 1999.

### Cost Estimate

A detailed cost estimate has been prepared by PC2, based on latest market data, and a summary of costs is presented below:

#### Estimated Project Component Costs (US\$ Millions)

	Local	Foreign	Total
<b>Distribution Lines</b>			
Concrete Poles and hardware (7,870)	0	1.368	1.368
ACSR Conductors (4,563 tons)	0.0	0.912	0.912
ABC Cables and accessories (190 km)	0.0	0.874	0.874
Underground 25 kV cables/accessories (4 km)	0.0	0.210	0.210
Insulators, fuses, switches and arresters	0.0	0.344	0.344
<b>Distribution Substations</b>			
Transformers (310, 50 - 400 kVA)	0.0	0.756	0.756
Compact substations (10, 400 - 700 kVA)	0.0	0.400	0.400
Switching, control and metering equipment	0.0	2.656	2.656
Construction Equipment (9, digger derrick trucks)	0.0	1.170	1.170
Installation, administration and overheads	2.250	0.0	2.250
Base Cost	2.250	8.690	10.940
Physical Contingency	0.225	0.869	1.094
Price Contingency	0.125	0.441	0.566
Duties and taxes	0.400	0.0	0.400
<b>Total Cost</b>	<b>3.000</b>	<b>10.000</b>	<b>13.000</b>

### Procurement Arrangements

All procurement for the project component would follow the Bank Guidelines for Procurement published in January 1995 and revised in January 1996 and August 1996. Procurement would fall into the following categories: (a) equipment and materials very urgently

needed to remove temporary constructions and restore permanent supplies, amounting to about US\$3.6 million equivalent - these items, comprising ACSR conductors, concrete poles and a part of transformers, all of which are available from several suppliers in Vietnam, would be procured through National Competitive Bidding (NCB) procedures; (b) replenishment of equipment and materials diverted from other projects and spare parts inventory, and items not available locally, amounting to about US\$6.4 million equivalent - these items would be procured using ICB procedures. Minor civil works and installation would be carried out using PC2's staff in the provinces. These items will not be financed from the proposed IDA Credit. The following 7 procurement packages are proposed to be financed by the IDA Credit. A bar chart for procurement is attached.

**Summary of Procurement Arrangements**  
(for items financed from the IDA Credit)  
(US\$ million)

Package No.	Item	Method of Procurement		Total Cost
		ICB	NCB	
1.	Concrete poles	-	1.6	1.6
2.	ACSR conductors		1.5	1.5
3.	Underground cables	1.2	-	1.2
4., 5.	Transformers	0.5	0.5	1.0
6.	Switching & control	3.3	-	3.3
7.	Construction equipment	1.4	-	1.4
	<b>Total</b>	<b>6.4</b>	<b>3.6</b>	<b>10.0</b>

**Disbursement**

The IDA credit for this component would be disbursed against 100% of foreign expenditures, or 100% of local expenditures (ex-factory cost) for goods procured through ICB and NCB.

## IMPLEMENTATION PLAN FOR EMERGENCY RECOVERY OF TYPHOON DAMAGES

Activities	Start	Finish	1998												1999								
			Dec	Ja	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	
			Preparation of Bids	1-Dec-97	30-Jan-98	[Gantt bar from Dec 1997 to Jan 1998]																	
Advertisement	20-Feb-98	28-Feb-98	[Gantt bar from Feb 20 to Feb 28 1998]																				
Approval	1-Feb-98	1-Mar-98	[Gantt bar from Feb 1 to Mar 1 1998]																				
Issuance of Bids	2-Mar-98	16-Apr-98	[Gantt bar from Mar 2 to Apr 16 1998]																				
Selection of Bids	10-Apr-98	30-May-98	[Gantt bar from Apr 10 to May 30 1998]																				
Approval	1-Jun-98	15-Jul-98	[Gantt bar from Jun 1 to Jul 15 1998]																				
Finalize Contract	10-Jul-98	30-Jul-98	[Gantt bar from Jul 10 to Jul 30 1998]																				
Contract Approval	1-Aug-98	30-Aug-98	[Gantt bar from Aug 1 to Aug 30 1998]																				
Delivery	1-Nov-98	1-Mar-99	[Gantt bar from Nov 1 1998 to Mar 1 1999]																				
Erection Works	1-Dec-99	30-Jun-00	[Gantt bar from Dec 1 1999 to Jun 30 2000]																				
Commissioning	1-Jan-01	1-Jul-01	[Gantt bar from Jan 1 2001 to Jul 1 2001]																				

## **ANNEXES**





**Annex 1**  
**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Project Design Summary**

Narrative Summary	Key Performance Indicators	Monitoring and Supervision	Critical Assumptions and Risks																																
<p><b>CAS Objective</b></p> <p>Ease infrastructure constraints to maintain pace of economic development.</p> <hr/> <p>Support power sector reforms and restructuring</p> <hr/> <p>Ease institutional bottlenecks by strengthening sector institutions.</p>	<p>Generation reserve margin (%)</p> <table border="1"> <tr> <td></td> <td>1997</td> <td>2000</td> <td>2002</td> </tr> <tr> <td></td> <td>15</td> <td>25</td> <td>30</td> </tr> </table> <p>Sector Investment (\$bn.)</p> <table border="1"> <tr> <td></td> <td>1997</td> <td>2000</td> <td>2002</td> </tr> <tr> <td></td> <td>0.84</td> <td>1.12</td> <td>1.03</td> </tr> </table> <p>Per capita consumpn. (kwh)</p> <table border="1"> <tr> <td></td> <td>1997</td> <td>2000</td> <td>2002</td> </tr> <tr> <td></td> <td>213</td> <td>310</td> <td>389</td> </tr> </table> <hr/> <p>Arms-length operation of EVN from the Government. Commercialized transactions between "transmission" and "distribution". Internally generated cash for investments.</p> <p>Sector's self financing ratio</p> <table border="1"> <tr> <td></td> <td>1997</td> <td>2000</td> <td>2002</td> </tr> <tr> <td></td> <td>30%</td> <td>30%</td> <td>30%</td> </tr> </table> <hr/> <p>Increased autonomy of distribution companies. Appointment of Deputy Director General for customer service by April 1998.</p>		1997	2000	2002		15	25	30		1997	2000	2002		0.84	1.12	1.03		1997	2000	2002		213	310	389		1997	2000	2002		30%	30%	30%	<p>Annual review of statistics to be maintained by EVN.</p> <hr/> <p>IDA monitoring (based on annual reports to be maintained by EVN) of:</p> <p>(a) independence of EVN's decisions;</p> <p>(b) payment systems for power;</p> <p>and (c) sector's overall self-financing ratio.</p> <hr/> <p>Judgment of IDA supervision missions.</p>	<p><b>(CAS Objective to Bank Mission)</b></p> <p>Macroeconomic conditions are favorable to sustain demand growth. Sector is able to raise the necessary mix of foreign financing while complying with the IMF imposed ESAF limitations.</p> <hr/> <p>Government commitment to reforms remains strong. IDA technical support is intensified.</p> <hr/> <p>Government commitment to reforms remains strong. IDA technical support is intensified.</p>
	1997	2000	2002																																
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<p><b>Project Development Objectives</b></p> <p>Strengthen the high voltage transmission network to facilitate evacuation of power from generating stations.</p>	<p>Transmission Reliability (faults/km/year)</p> <table border="1"> <tr> <td></td> <td>1997</td> <td>2000</td> <td>2002</td> </tr> <tr> <td>500 kV</td> <td>.02</td> <td>.005</td> <td>.005</td> </tr> <tr> <td>220 kV</td> <td>.22</td> <td>.22</td> <td>.22</td> </tr> </table> <p>Transmission losses (%)</p> <table border="1"> <tr> <td></td> <td>1997</td> <td>2000</td> <td>2002</td> </tr> <tr> <td></td> <td>19.8</td> <td>17.0</td> <td>16.0</td> </tr> </table> <p>Central-South Power Flow</p> <table border="1"> <tr> <td></td> <td>1997</td> <td>2000</td> <td>2002</td> </tr> <tr> <td>MW</td> <td>66</td> <td>856</td> <td>856</td> </tr> </table>		1997	2000	2002	500 kV	.02	.005	.005	220 kV	.22	.22	.22		1997	2000	2002		19.8	17.0	16.0		1997	2000	2002	MW	66	856	856	<p>Annual monitoring of statistics to be kept by EVN.</p>	<p><b>(Development Objectives to CAS Objective)</b></p> <p>500 kV transmission system is completed on time and thereafter well operated and maintained. Major hydro plants in center are completed on time and thereafter well operated and maintained. 220 kV system under the</p>				
	1997	2000	2002																																
500 kV	.02	.005	.005																																
220 kV	.22	.22	.22																																
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<p>Rehabilitate distribution systems to reduce losses and improve reliability.</p>	<p>GWh 260 3,420 3,420                  Nha Be Taodan Power Flow                  1997 2000 2002                  MW 0 250 500                  GWh 0 1,125 2,250</p> <p>Annual Supply Interruptions                  1997 2000 2002                  Halong 17 10 8                  Vinh 32 22 10                  Vungtau 100 20 5                  HCMC 20 12 8</p> <p>Avg. Interruption Duration                  (hours/year)                  1997 2000 2002                  Halong 3 2 1                  Vinh 3.5 2.2 1.1                  Vungtau 29 5 3                  HCMC 14.5 12 10</p> <p>Distribution Losses %                  1997 2000 2002                  Halong 18 10 10                  Vinh 15 11 10                  Vungtau 12.5 8 8                  HCMC 14.5 12 10</p>	<p>Annual monitoring of statistics to be kept by EVN, PC1 and PC2</p>	<p>Project is completed on time and thereafter well operated and maintained.</p> <p>Distribution systems are completed on time and thereafter well operated and maintained.</p>
<p>Support sector reform and restructuring through: (a) unbundling "transmission" and "generation" functions; (b) implementation of regulatory reforms; (c) introduction of tariff reforms; and (d) exploring financing of distribution from diversified sources;</p>	<p>Operation of "transmission" as cost center from 1998 and profit center from end 1999. Fully transparent contractual energy and capacity transactions between EVN "transmission" and "generation" and distribution companies by end 1999. Presentation of Electricity Law to National Assembly by mid-1998. Promulgation of secondary legislation within 12 months of approval by National Assembly. Separate regulatory office and functions, mid-1999. Transparent regulatory procedures - end-1999. Progressive increase in electricity tariffs (US¢/kwh)</p>	<p>Progress reports from MOI and EVN to be compiled by EVN. Study for improvement of EVN transmission and distribution functions. Regulatory system study.</p>	<p>Government continued commitment to push with reforms and tariff increases. EVN is unbundled into transmission and generation in a timely and efficient manner. Contracts between transmission and distribution companies are completed on time. Efforts are made at involving external parties in distribution.</p>

	<p>1997 1998 1999 2000 6.1 6.6 7.0</p> <p>External involvement in distribution - Pilot 1999.</p>		
<p>Support institutional strengthening and commercialization through: (i) securing greater autonomy for the distribution companies; and (ii) improving its Financial Management Systems.</p>	<p>Issue charters for each distribution company granting increased operational and management autonomy by mid 1998 Create distribution function at Deputy Director General level by April 1998. Improved accounting and budgeting systems by January 1999.</p>	<p>Annual progress reports to be provided by EVN. Government decrees. Outputs of technical assistances.</p>	<p>Strong Government commitment to reforms. Good performance of TA consultants and strong involvement of counterpart staff.</p>
<p>Reduce peak demand and electricity consumption through DSM activities.</p>	<p>Quantified reductions in peak demand (kW) and electricity consumption (kWh).</p>	<p>Progress reports from EVN.</p>	<p>Ability of EVN to monitor and quantify DSM program and policy impacts.</p>
<p><b>Project Outputs</b> 500 kV Pleiku Phulam transmission system and 500 kV substations.</p>	<p>Transm. line length (km) 1997 2000 2002 1,480 2,040 2,660</p> <p>Transformer capacity (MVA) 1997 2000 2002 2,700 3,150 4,400</p>	<p>To be monitored annually from statistics to be maintained by EVN.</p>	<p><b>(Outputs to Development Objectives)</b> Timely availability of counterpart funds.</p> <p>EVN, PC1, PC2 managements are committed to deploy adequate resources for timely Project completion.</p>
<p>220 kV Nha Be Tao Dan system for supply to HCMC.</p>	<p>Transm. line length (km) 1997 2000 2002 0 10 10</p> <p>Transformer capacity (MVA) 1997 2000 2002 0 376 626</p>		
<p>Distribution systems of Halong, Vinh and Vung Tau.</p>	<p>MV line length (km) 1997 2000 2002 370 510 650</p> <p>Transformer capacity (MVA) 1997 2000 2002 220 1,110 3,700</p> <p>LV line line length (km) 1997 2000 2002 307 995 1,400</p>		
<p>Develop capability within EVN and government agencies to design and</p>	<p>Number of staff trained and participating in DSM implementation and successful introduction of</p>	<p>Progress and supervision reports from EVN.</p>	<p>EVN and Government willing and able to effectively implement DSM program and policy</p>

<p>implement DSM programs and a policy framework.</p> <p>Demonstration of DSM programs and load management.</p> <p>Demonstration of efficiency standards.</p>	<p>DSM policy framework.</p> <p>Successful implementation of DSM and load management pilots.</p> <p>Creation of energy-efficient standards for lighting, motors and commercial buildings.</p>		<p>framework.</p> <p>EVN able to demonstrate benefits of DSM pilots to government and public.</p>
<p><b>Project Components</b></p> <p>500 kV Pleiku-Phulam line and 500 kV substations, Nha Be Tao Dan 220 kV system, distribution systems of Halong, Vinh and Vung Tau.</p> <p>Acquisition of land for construction of transmission lines and substations and expanding distribution.</p> <p>Project management including engineering, design and construction supervision of transmission lines and substations.</p> <p>Procurement of equipment for transmission lines, substations and distribution systems.</p> <hr/> <p>Technical Assistances for Regulatory framework. Capacity building of regulatory agency</p>	<p>Completion of land surveys and compensation.</p> <p>Adequately staffed project management groups and adequate consulting assistance.</p> <p>Timely-issue of bid invitations, bid evaluations and contract awards.</p> <hr/> <p>Timeliness and quality of reports. Secondary legislation on formation and implementation of</p>	<p>Periodic status reports on land acquisition and compensation from EVN.</p> <p>Monitoring efficacy of project management during IDA supervisions.</p> <p>Monitoring Procurement progress by IDA's system at the Resident Mission.</p> <hr/> <p>IDA supervisions and consultants' reports.</p>	<p><b>(Components to Outputs)</b></p> <p>Adequate manpower and financial resources for land procurement work.</p> <p>Deployment of adequately skilled and manned project management teams by EVN, PC1 and PC2.</p> <p>Expeditious management decisions on procurement related issues.</p> <hr/> <p>Timely appointment of consultants of high caliber. Adequate interaction with counterpart staff, adequate counterpart funds.</p>

including training of staff.	regulatory agency by end 1998. Number of trained regulatory staff.		
Technical assistance to EVN's DSM Cell.	Number of trained DSM staff.	Progress and supervision reports from EVN as well as consultants' reports.	Timely appointment of consultants of high caliber.
Pilot load management program.	Successful implementation of pilot DSM programs and policy framework.		Adequate interaction with counterpart staff.
Equipment and building efficiency standards.	Pilot load management program in 100 large buildings.		
Pilot municipal street lighting program	Establishment of equipment standards and building code. Successful implementation of street lighting program.		Ability of EVN and government agencies to effectively implement pilot programs.



**Annex 2**  
**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Detailed Project Description**

**Pleiku-Phulam 500 kV Transmission Line and Associated Substations (US\$164.5 million)**

The existing 500 kV single circuit line from north to south Vietnam is operating at the limit of its capability. With the commissioning of the 720 MW Yali hydropower project in central Vietnam by 1999-00 it would be necessary to construct a second 500 kV circuit between Pleiku in the center and Phulam in the south. The project component involves construction of: (a) a 550 km long, 500 kV transmission line, with 4-bundle conductors per phase and an earth wire with optical fibre cable for lightning protection and communication. The transmission line would be routed through six provinces (Gia Lai, Dac Lac, Lam Dong, Dong Nai, Song Be, Long An) and the outskirts of Ho Chin Minh City, for the most part along highways 14, 20 and 21; (b) expansion of the two existing substations at Pleiku and Phulam with additional switching bays and associated equipment; (c) construction of two new switching points at Bao Loc and Tan Dinh along the line route, with switching equipment and capacitors. Bao Loc would serve as the connection point for future hydropower stations in the region. Tan Dinh would serve as the connection point for the 220 kV networks in Song Be province and Ho Chin Minh City in the future; and (d) provision of control and dispatch equipment for the system.

**Expansion of Ha Tinh Substation (US\$16 million)**

The existing 500 kV Ha Tinh substation in north-central Vietnam is a compensation substation. With the forecast growth in power demand in the region to 430 MW in 2000 and 993 MW in 2010, it is necessary to convert this to a full fledged power supply point, relieving the load from the heavily loaded and high loss existing regional network. Under the proposed project, the Ha Tinh compensation substation would be expanded, and equipped with a 450 MVA, 500/220/35 kV transformer, a 63 MVA, 220/110/22 kV transformer and associated 220 kV, 110 kV and 35 kV switching bays for power distribution in the region.

**220 kV Nha Be - Tao Dan Transmission Line and GIS Substation (US\$56 million)**

Ho Chi Minh city is currently supplied by three 220 kV substations. To meet the city's ever increasing demand, the Power Development Plan calls for the construction of a fourth 220 kV supply point at Tao Dan in the heart of the city by 1998. This substation would be supplied from the Nha Be substation. The project component involves: (a) construction of a double-circuit 220 kV, 12 km long, transmission line connecting Nha Be and Tao Dan substations. The line would comprise a 2 km long above-ground segment and a 11 km long underground segment in the congested part of the city. The cable will be XLPE insulated, having a cross section of 2,000 sq. mm.; and (b) construction of a GIS substation equipped with 2, 250 MVA, 220/115/23 kV transformers each rated at 100 MVA, 2, 63MVA, 115/23/15.7 kV transformers, six 220 kV and 10, 110 kV switching bays. Tao Dan will feed power to the Saigon Center, Cong Vien, So Thu and Ben Thanh substations.

**Rehabilitation of Distribution Networks in Halong, Vinh and Vung Tao (US\$61.5 million)**

The demand in Halong in 1996 was 110 Gwh and this is expected to grow to 179 Gwh by the year 2000, at an average growth rate of about 13% p. a. The demand in Vinh in 1996 was 166 Gwh and

this is expected to grow to 301 Gwh by the year 2000, at an average growth rate of about 16% p. a. The demand in Vung Tau in 1996 was 150 Gwh and this is expected to grow to 541 Gwh by the year 2000, at an average growth rate of about 38% p.a., being an industrial development zone. The losses in Halong, Vinh and Vung Tau currently run at 18%, 15% and 12.5% respectively. If rehabilitation and expansions are not undertaken, not much additional load can be supplied without excessive losses and greatly deteriorated system reliability. With the projects, the additional loads can be met and the losses would be reduced to the order of 8% to 10%. The works proposed to be undertaken in the three cities are indicated below.

Ha Long City. Rehabilitation and upgrading of the distribution network in Ha Long City would comprise: (a) installation of a 110/35/22 kV, 40 MVA transformer at the 110 kV Gieng Day substation in the west of the city; (b) installation of a 110/35/22 kV, 25 MVA transformer at the 110 kV Ha Tu substation; (c) replacing existing transformer at the 110 kV Giap Khau substation by a 110/22 kV, 25 MVA transformer; (d) strengthening the distribution network in the city by: (i) upgrading voltage at 150 substations, totaling 44,300 kVA of capacity, from 6/0.4 kV to 22/0.4 kV; (ii) changing voltage at 10 substations, totaling 2,340 kVA of capacity, from 35/0.4 kV to 22/0.4 kV; (iii) installing 187 new 22/0.4 kV substations with total capacity of 54,750 kVA in overloaded areas of the city; (iv) strengthening the 22/0.4 kV distribution network by addition of 8 km of underground cable, 25 km of double-circuit and 80 km of single-circuit above ground transmission lines; and (v) strengthening the 0.4 kV distribution network through upgrading of 480 km of distribution lines, and installation of 15,000 customer meters; and (e) provision of training facilities.

Vinh City. Rehabilitation and upgrading of the distribution network in Vinh City would comprise: (a) construction of: (i) 4 segments of 35 kV lines totaling 18.6 km; (ii) construction of 112 km of 22 kV lines, comprising six segments between the 110 kV Ben Thuy substation and six other substations, and three segments between the 110 kV Dong Hung substation and Le Ninh substation; (b) rehabilitation of 22/0.4 kV and 10-22/0.4 kV substations through installation or replacement of 205 distribution transformers with total capacity of 46,715 kVA; (c) improving the 0.4 kV distribution network and the sales operations in Vinh City, by adding 172 km of 0.4 kV lines and installing 39,000 customer meters; and (d) provision of training facilities.

Vung Tau City. Rehabilitation and upgrading of the 22 kV distribution network in Vung Tao city would be accomplished through: (a) raising the voltage level of 15 kV overhead lines to 22 kV; (b) adding 93 km of 22 kV copper underground cable and replacing 20.3 km of uninsulated 22 kV overhead lines by insulated three phase conductor; (c) strengthening the 22 kV network through installation of 40 sets of remote controlled reclosers and 80 sets of remote controlled load break switches, and replacement of 300 sets of 100/200 A fuses designed to prevent overloading during outages in the network; (d) construction of 195 new 22/0.4 kV substations with total capacity of 118,900 kVA; (e) construction of 484 km of three phase 220/380 V and 20 km of single phase 220 V aluminum conductor lines for the 220/380 V distribution network; and (f) provision of training facilities. The load dispatch system in the city would be upgraded through installation of a mini-SCADA system to control/operate 22 kV feeders and communication system between feeders and 40 nodes in the system. Operation of the distribution system would also be improved through installation of energized cable sensors, line fault locators, voltage indicators and related devices.

#### **Consulting Services for Project Design (US\$2.0 million)**

Consulting services financed by the IDA Credit would cover preparation of detailed designs and bid documents and project management for: (a) the 500 kV Pleiku-Phulam transmission system; and (b)



the 220 kV Nha Be Taodan cable and GIS substation system. Consulting services for detailed design and bid documents for the rehabilitation of the distribution systems of Halong, Vinh and Vung Tau are being financed by a French Government grant and will be provided by EDF.

## **Technical Assistance**

### **Demand-Side Management. (US\$4.5 million)**

International consultants, commissioned by EVN in 1995, recommended implementation of a phased DSM Action Plan to capture identified opportunities for cost-effective electricity savings in all sectors and end-use applications. This Action Plan would remove barriers to cost-effective energy conservation and efficiency by: (a) building institutional capacity and experience to design, implement, monitor and evaluate DSM programs through pilot programs and training; (b) developing a DSM policy framework; and (c) introducing minimum efficiency standards for electrical appliances and new commercial buildings. The project component would implement Phase I of the DSM Action Plan, which would specifically: (a) provide technical assistance to EVN's DSM Cell to design, implement and evaluate DSM programs and establish a policy framework; (b) implement a load management program in 100 of the country's largest industrial and commercial customers' premises; (c) establish and adopt national efficiency standards for lighting, motors and commercial buildings; (d) implement a pilot municipal street lighting program; and (e) prepare feasibility studies for implementation of Phase II of the DSM Action Plan, including an industrial energy audit program.

***EVN's DSM Cell:*** A DSM Cell would be created within EVN, with an initial staff of about five, to: (a) design a national policy framework for DSM and energy efficiency; (b) develop a regulatory mechanism to encourage utilities to undertake DSM; (c) prepare and implement initial DSM programs, including industrial energy audits; (d) coordinate DSM program implementation; and (e) monitor and evaluate DSM programs. Technical assistance would be provided to build capability in all aspects of DSM policy and planning and program design and implementation. Computer hardware and software for DSM planning, analysis, monitoring and evaluation, as well as industrial energy audits, would be financed under this sub-component.

***Pilot Load Management Program:*** Technical assistance would be provided to EVN's DSM Cell to conduct load research and implement a pilot load management program for 100 of the country's largest industrial and commercial customers. Technical assistance would also be provided to EVN's participating subsidiary PCs to develop capacity to implement and monitor the load management program. Equipment financed under this sub-component would include time-of-use meters and billing software.

***Pilot Public Lighting Program:*** Technical assistance would be provided to EVN's DSM Cell and MOC to design and implement a pilot municipal street lighting program in cooperation with participating subsidiary PCs and municipal governments. The program would provide the DSM Cell with experience in all aspects of DSM program design and implementation. Equipment financed under this sub-component would include approximately 600 high efficiency public street lights.

***Equipment and Building Efficiency Standards:*** Technical assistance would be provided to the MOI, MOSTE and MOC to design and implement efficiency standards for lighting equipment and industrial motors (MOI and MOSTE) and commercial buildings (MOC) and to arrange for testing of equipment at existing testing facilities in neighboring countries (e.g., Thailand, the Philippines).

Equipment financed under this sub-component would include computer hardware and related software to design, implement and monitor standards.

**Transmission and Distribution Functions. (Project Preparation, US\$0.7 million)**

The scope of the technical assistance is:

**Improvement of Transmission Business Units.** (a) review of EVN's proposed organizational structure for the management and operation of the transmission grid and identification of issues and constraints to the creation of a single transmission business unit which would be responsible for the purchase of power from independent power producers and sale to distribution companies; (b) review of existing national load dispatch and communications facilities to facilitate improvement of transmission operations together with optimal system dispatch; (c) establishment of a transmission grid code setting out basic technical requirements for grid connection and rules for dispatch; and (d) preparation of a detailed implementation plan for the establishment of improved transmission operations and milestones for agreed actions critical to achieving improvements.

**Commercialization and Corporatization of Distribution Companies.** (a) establishment of updated asset values for the distribution companies; (b) drafting of commercial bulk power sales contracts between generation and transmission entities and the distribution entities; and (c) review of advice on the modifications necessary to the charters of the distribution companies to give their management greater autonomy and accountability for operational and financial policies.

**Options for Diversified Sector Participation and Financing of Distribution.** (a) development of a strategy for diversified participation in the distribution companies and evaluation of options for diversified participation and financing; (b) preparation of detailed guidelines for implementation of diversified participation in distribution; and (c) drafting of tender documents and model concession agreements for seeking bids from private sector for distribution company franchises.

**Bulk Power Supply Tariffs.** (a) review of the financial requirements of EVN's transmission and generation business units and the distribution companies; and transition strategy for implementing the above; and (b) recommendation of steps for (i) implementing bulk power supply tariffs; (ii) mechanisms for tariff determination, review and setting; (iii) a cost effective and flexible bulk supply metering arrangement; and (iv) a transition strategy for implementing the above.

**Regulatory Framework. (US\$0.8 million)**

The Government is currently drafting an Electricity Law and subsidiary regulations with the objective of: (a) defining the responsibilities of the different government agencies involved in the power sector; (b) defining the appropriate regulatory functions to be undertaken by government supervisory agencies; (c) delineating the regulatory responsibilities of different government agencies and ministries; and (d) developing a suitable institutional form for the conduct of the regulatory functions.

The above task is progressing well and is being supported by grants from ESMAP and from IDF. The task that would be undertaken under this regulatory technical assistance is required to complement the on-going activities in drafting the Electricity Law and subsidiary regulations. More specifically, this technical assistance is necessary to prepare the detailed working procedures and analytic tools that would be utilized to effectively regulate the power sector. It would also assist in developing the necessary skills in the agency/institution that will perform the regulation.

The scope of work includes: (a) preparation of the detailed regulatory criteria and procedures to regulate the power sector. This would cover, investment and financial criteria, reliability and performance criteria for the different power sector entities; (b) defining and developing the analytic and administrative procedures to perform the regulation. This would include, financial and economic evaluation models, detailed manuals and guidelines; and (c) training of staff who would be performing the regulatory functions.



**Annex 3**  
**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Estimated Project Costs**  
**(US\$ Million)**

	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
<b>A. Pleiku-Phulam 500 kV Transmission Line</b>			
Construction and Erection	34.5	0.0	34.5
Steel Towers and Reinforcement Bars	0.0	27.2	27.2
Conductors, Insulators and Accessories	0.0	28.2	28.2
Optical Cable	0.0	8.0	8.0
Capacitors and Other Electrical Equipment	0.0	23.4	23.4
Communication Equipment	0.0	4.0	4.0
Control and dispatch equipment	0.0	4.0	4.0
Land Acquisition and Compensation	7.7	0.0	7.7
Base Cost	42.2	94.8	137.0
Physical Contingency	2.7	4.5	7.2
Price Contingency	4.4	3.2	7.6
Engineering and Supervision	8.2	0.0	8.2
Duties and Taxes	4.5	0.0	4.5
<b>Sub-Total</b>	<b>62.0</b>	<b>102.5</b>	<b>164.5</b>
<b>B. 500 kV Ha Tinh Substation</b>			
500/220/35 kV Transformers, 450 MVA	0.0	4.5	4.5
220/110/22 kV Transformers, 63 MVA	0.0	1.6	1.6
Switchgear and Electrical Equipment	0.0	4.9	4.9
Connection Line	0.6	0.9	1.5
Steel Structures	0.0	0.1	0.1
Construction and Installation	1.2	0.3	1.5
Land Acquisition and Compensation	0.1	0.0	0.1
Base Cost	1.9	12.3	14.2
Physical Contingency	0.1	0.5	0.6
Price Contingency	0.3	0.2	0.5
Engineering and Supervision	0.4	0.0	0.4
Duties and Taxes	0.3	0.0	0.3
<b>Sub-Total</b>	<b>3.0</b>	<b>13.0</b>	<b>16.0</b>

	Local	Foreign	Total
<b>C. 220 kV Nha Be - Tao Dan T/L and GIS Substation</b>			
<u>Above-ground 220 kV Line</u>			
Construction and Installation	0.3	0.0	0.3
Conductors, Insulation, Steel Towers and Auxiliaries	0.0	0.6	0.6
<u>Underground 220 kV Line</u>			
Construction and Installation	1.8	0.0	1.8
Cable and Auxiliaries	0.0	27.2	27.2
<u>Tao Dan GIS Substation</u>			
Construction and Installation	1.8	0.0	1.8
Transformers and Other Electrical Equipment	0.0	14.0	14.0
Land Acquisition and Compensation	1.5	0.0	1.5
Base Cost	5.4	41.8	47.2
Physical Contingencies	0.5	2.1	2.6
Price Contingencies	0.9	1.1	2.0
Engineering and Supervision	2.9	0.0	2.9
Duties and Taxes	1.3	0.0	1.3
<b>Sub-Total</b>	<b>11.0</b>	<b>45.0</b>	<b>56.0</b>
<b>D. Rehabilitation of Distribution Networks</b>			
<b>(a) Ha Long City</b>			
<u>High Voltage Substations</u>			
Transformers	0.0	1.2	1.2
Electrical Equipment	0.0	2.4	2.4
Construction and Installation	0.3	0.0	0.3
<u>Distribution Network</u>			
Transformers	0.0	2.0	2.0
Conductors, Insulation and Accessories	0.2	3.6	3.8
Communication Equipment	0.2	0.1	0.3
Construction and Installation	3.6	0.0	3.6
Land Acquisition and Compensation	0.8	0.0	0.8
Training facilities	0.0	1.0	1.0
Base Cost	5.1	10.3	15.4
Physical Contingencies	0.2	0.5	0.7
Price Contingencies	0.4	0.7	1.1
Engineering and Supervision	0.8	0.0	0.8
Duties and Taxes	0.5	0.0	0.5
<b>Sub- Total</b>	<b>7.0</b>	<b>11.5</b>	<b>18.5</b>

	Local	Foreign	Total
<b>(b) Vinh City</b>			
35 kV Transmission Lines	0.0	0.3	0.3
22 kV Underground Cable	0.0	2.8	2.8
22 kV Transmission Lines	0.0	0.9	0.9
22/0.4 kV Substations	0.0	1.4	1.4
0.4 kV Underground Cable	0.0	1.0	1.0
0.4 kV Transmission Lines	0.0	1.4	1.4
Meters and Related Materials	0.0	1.5	1.5
Construction and Installation	3.7	0.0	3.7
Land Acquisition and Compensation	1.5	0.0	1.5
Training facilities	0.0	1.0	1.0
<b>Base Cost</b>	<b>4.6</b>	<b>10.3</b>	<b>14.9</b>
Physical Contingencies	0.2	0.5	0.7
Price Contingencies	0.5	0.7	1.2
Engineering and Supervision	1.2	0.0	1.2
Duties and Taxes	0.5	0.0	0.5
<b>Sub- Total</b>	<b>7.0</b>	<b>11.5</b>	<b>18.5</b>
<b>(c) Vung Tau City</b>			
22 kV Network	0.0	5.7	5.7
22/0.4 kV Substations	0.0	1.3	1.3
220/380 V Network	0.0	4.8	4.8
Communication and Operation Facility	0.2	0.8	1.0
Customer Meters and Accessories	0.0	0.5	0.5
Construction and Installation	5.4	0.0	5.4
Land Acquisition and Compensation	0.8	0.0	0.8
Training facilities	0.0	2.0	2.0
<b>Base Cost</b>	<b>6.4</b>	<b>15.1</b>	<b>21.5</b>
Physical Contingencies	0.3	0.6	0.9
Price Contingencies	0.6	0.8	1.4
Engineering and Supervision	1.1	0.0	1.1
Duties and Taxes	0.6	0.0	0.6
<b>Sub- Total</b>	<b>9.0</b>	<b>16.5</b>	<b>25.5</b>

	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
<b>E. Consulting Services</b>			
Design and Bid Document Preparation:			
(a) 500 kV Transmission Line	0.0	1.0	1.0
(b) 200 kV System and Cable Transmission	0.0	1.0	1.0
(c) Regulatory Framework	0.1	0.7	0.8
<b>Sub- Total</b>	<b>0.1</b>	<b>2.7</b>	<b>2.8</b>
<b>F. Demand Side Management</b>	<b>0.9</b>	<b>3.6</b>	<b>4.5</b>
<b>G. Total Project Cost</b>			
500 kV Transmission Line	42.2	94.8	137.0
500 kV Ha Tinh Substation	1.9	12.3	14.2
220 kV Nha Be - Tao Dan T/L and GIS Substation	5.4	41.8	47.2
Ha Long Distribution	5.1	10.3	15.4
Vinh Distribution	4.6	10.3	14.9
Vung Tao Distribution	6.4	15.1	21.5
<b>Base Cost</b>	<b>65.6</b>	<b>184.6</b>	<b>250.2</b>
Physical Contingencies	4.0	8.7	12.7
Price Contingencies	7.1	6.7	13.8
Engineering and Supervision	14.6	0.0	14.6
Duties and Taxes	7.7	0.0	7.7
Consulting Services	0.1	2.7	2.8
Demand Side Management	0.9	3.6	4.5
<b>Total Project Cost (without IDC)</b>	<b>100.0</b>	<b>206.3</b>	<b>306.3</b>
Interest During Construction (IDC)	12.7	0.0	12.7
<b>GRAND TOTAL PROJECT COST <sup>/1</sup></b>	<b>112.7</b>	<b>206.3</b>	<b>319.0</b>

<sup>/1</sup> Excluding cost of Disaster Reconstruction Component.



**Annex 4**  
**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Cost Benefit Analysis Summary**  
(Monetary Values are in US\$)  
(Base Year - 1995)

	Present Value of Flows		Fiscal Impact	
	Economic Analysis	Financial Analysis	Taxes	Subsidies
Benefits	899 mln.	2,331 mln		
Costs	614 mln.	2,144 mln.	N. A.	N. A.
Net Benefits:	286 mln.	187 mln.		
IRR:	27%	13%		

**Switching Values of Critical Items to drop ERR to 10%:**

Variable	Pleicu -Phulam	Ha Tinh SubSt.	Nha Be Tao Dan	Halong Distrib.	Vinh Distrib.	Vung Tau Distrib.
Cost						
Overrun %	64	49	290	270	240	202

**A. Economic Analysis**

**General Approach**

Economic analyses for all project components are carried out using two scenarios: (a) "with" the project ; and (b) "without" the project. The following assumptions are made: (a) all costs are expressed in constant 1995 prices, making no adjustments for shadow exchange rate or shadow wage rate; (b) the capital investments are considered over the 1997-2000 period and the analyses are made over a project economic life of 20 years (2000-2020); and (c) the economic internal rate of return (ERR) of the project component is the discount rate at which the present value of the cost streams of the "with" project and "without" project scenarios are equal. The net present values (NPVs) are based on a discount rate of 10%, which is approximately the opportunity cost of capital in Vietnam.

**Pleiku - Phulam 500 kV Transmission Line**

The "with" project scenario consists of strengthening the 500 kV North-Center-South transmission link by constructing the second 500 kV circuit between central and south Vietnam. This is necessary with the coming into operation of the 720 MW Yali hydropower station in central Vietnam. The "without" project scenario consists of strengthening the 220 kV network between central and south Vietnam to transmit power from the Yali hydropower project. Table 1 indicates for the two scenarios:

(a) the investments for both scenarios; (b) the operation and maintenance costs evaluated at 2% of the investment cost; (c) the losses for both scenarios evaluated at LRMC of US\$3.09/kWh; (d) the unserved energy due to system unreliability for both scenarios, evaluated at US\$0.5/kWh (a conservative value compared to estimates in other developing countries which range from US\$0.6 to US\$2.6/kWh for residential and industrial consumers, respectively); and (e) the surplus energy from the north that the 500 kV line (with “project” scenario) can transmit is evaluated at US\$2.34/kWh, the LRMC for developing high voltage transmission. The ERR is estimated at 30.5% and the NPV at US\$95.8 million. Project cost increases of 10% and 20% result in a decrease of the ERR to 24.6% and 20.4%, respectively, while a delay of one year in project completion reduces the ERR to 24%. A simultaneous completion delay of one year and cost increase of 20% reduces the ERR to 16.6%. The analysis shows that the rate of return on this project component, even under adverse conditions is significantly higher than the 10% threshold.

### **500 kV Ha Tinh Substation**

The “with” project scenario consists of the construction of the 500 kV Ha Tinh substation to distribute power in north-central Vietnam. The “without” project scenario consists of strengthening the 220 kV system between central and north Vietnam. Table 2 indicates for the two scenarios: (a) the investments for both scenarios; (b) the operation and maintenance costs evaluated at 2% of the investment cost; (c) the losses for both scenarios evaluated at LRMC of US\$3.09/kWh; and (d) the unserved energy due to system unreliability for both scenarios, evaluated at US\$0.5/kWh. The ERR is estimated at 41.5% and the NPV at US\$7.3 million. Project cost increases of 10% and 20% result in a decrease of the ERR to 29.8% and 22.2%, respectively, while a delay of one year in project completion reduces the ERR to 32.2%. A simultaneous completion delay of one year and cost increase of 20% reduces the ERR to 17.6%. The analysis shows that the rate of return on this project component, even under adverse conditions is significantly higher than the 10% threshold.

### **220 kV Nha Be - Tao Dan Underground Cable and GIS Substation**

The “with” project scenario includes construction of a 220 kV transmission line, consisting of an underground segment through the crowded section of HCMC and an above ground segment, and a GIS substation. The “without” project scenario assumes that no capital investments would be made. Table 3 indicates for the two scenarios: (a) the investment for the “with” project scenario; (b) operation and maintenance cost at 2% of investment cost; and (c) the incremental energy attributed to the project evaluated at the LRMC for development of the 110 kV system at US\$0.66/kWh and of the 22 kV system at US\$1.09/kWh. The ERR is estimated at 27.6% and the NPV at US\$125.9 million. Project cost increases of 10% and 20% result in a decrease of the ERR to 24.3% and 22.8%, respectively, while a delay of one year in project completion reduces the ERR to 22.4%. A simultaneous completion delay of one year and cost increase of 20% for the project reduces the ERR to 19.8%. The analysis shows that the rate of return on this project component, even under adverse conditions is significantly higher than the 10% threshold.

### **Rehabilitation of Distribution Systems of Ha Long, Vinh and Vung Tau**

(a) Under the “with” project scenario, the rehabilitation of the distribution system is assumed to meet the forecast demands at improving levels of losses and system reliability. The “without” project scenario assumes that no capital investments are made. Tables 4, 5 and 6 (for Ha Long, Vinh and Vung Tau, respectively) indicate for the two scenarios: (a) investment for the “with” project scenario; (b) operation and maintenance cost at 2% of investment cost; (c) unserved energy due to system unreliability for both scenarios evaluated at US\$0.5/kWh; (d) losses for both scenarios evaluated at LRMC of US\$7.18/kWh; and (e) the incremental energy attributed to the project evaluated at the LRMC

for development of the distribution system at US¢2.27/kWh. The ERRs and NPVs are estimated as follows:

	Ha Long	Vinh	Vung Tau
Base Case ERR (%)	24.8	22.9	20.5
Base case NPV (US\$ mln)	21.9	17.3	17.9
ERR with cost increase of 10%	22.9	21.1	18.9
ERR with cost increase of 20%	21.2	19.5	17.4
ERR with delay of one year	20.9	19.5	16.9
ERR with cost increase of 20% and delay of one year	18.1	16.7	14.5

### ERR for the Overall Project

An analysis to evaluate the ERR for the overall project is made using the sum of the costs of the “with” and “without” project scenarios, as the costs and benefits, respectively of the entire project, yields an ERR of 27.2% and an NPV of US\$286.1 million.

### B. Financial Analysis

A financial analysis of each project component is conducted (see **Tables 7 to 12**) with costs based on: (a) investment cost including duties and taxes and interest during construction; (b) operation and maintenance cost at 2% of investment cost; and (c) cost of incremental energy purchased at bulk purchase prices for each power company, and benefits based on: (a) revenues from energy sales (after allowing for losses) at the average sales prices for each power company. The financial internal rates of return FIRR and the NPVs at 7% discount rate are estimated as follows:

	FIRR%	NPV (US\$ mln)
500 kV Pleiku-Phulam Line	12.0	85.7
500 kV Ha Tinh Substation Base case NPV	21.0	15.6
220 kV Nha Be Tao Dan System	15.8	59.9
Ha Long Distribution	8.3	2.1
Vinh Distribution	13.5	10.3
Vung Tao Distribution	16.9	13.6
Whole Project	13.3	187.2

**Table 1 - Pleicu - Phu Lam 500kV Transmission Line - Economic Analysis**

Year	"with" Project (costs)							"without" Project (benefits)									Net Benefit US\$ min.	
	Invest	O&M	Losses	Unservd Energy (x)	Losses Value	Unservd Energy Value	Total Cost	Invst. in 220 kv	O&M	Losses	Unservd Energy (x)	Incremental Energy (y)	Losses Value	Unservd Energy Value	Incrementa Energy (y)	Total Cost		
	US\$ min.	US\$ min	GWh	GWh	US\$ min.	US\$ min.	US\$ min.	US\$ min.	US\$ min.	US\$ min.	GWh	GWh	GWh	US\$ min.	US\$ min.	US\$ min.		US\$ min.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		17
1997	2.70		320	60.0	9.89	30.00	42.59				320	60.0		9.89	30.00		39.89	-2.70
1998	42.50		320	60.0	9.89	30.00	82.39	42.9			320	60.0		9.89	30.00		82.79	0.40
1999	102.50		320	60.0	9.89	30.00	142.39	42.9			320	60.0		9.89	30.00		82.79	-59.60
2000	7.48	3.14	320	60.0	9.89	30.00	50.51	21.5			320	60.0		9.89	30.00		61.39	10.88
2001		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	400	9.87	20.65	9.36		41.98	20.36
2002		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	420	9.87	20.65	9.83		42.45	20.83
2003		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	450	9.87	20.65	10.53		43.15	21.53
2004		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	450	9.87	20.65	10.53		43.15	21.53
2005		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2006		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2007		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2008		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2009		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2010		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2011		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2012		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2013		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2014		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2015		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2016		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2017		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2018		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2019		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60
2020		3.14	250	21.5	7.73	10.75	21.62		2.1	319.5	41.3	581	9.87	20.65	13.60		46.22	24.60

(x) : Unserved Energy is due to system unreliability

(y) : Incremental energy is the difference of the energy transmitted by the project and the alternative plus the excess energy that 500 kV can transfer from north Vietnam

**EIRR** 30.5%  
**NPV (i=10%)** 95.8  
**NPV (i=12%)** 72.23

**Table 2 - Ha Tinh 500 kV Substation - Economic Analysis**

Year	"with" Project (costs)							"without" Project (benefits)							Net Benefit US\$ min
	Investment	O&M	Losses	Unserved Energy	Losses Value	Unserved Energy Value	Total Cost	Investment in 220 kv	O&M	Losses	Unserved Energy	Losses Value	Unserved Energy Value	Total Cost	
	US\$ min	US\$ min	GWh	GWh	US\$ min	US\$ min	US\$ min	US\$ min	US\$ min	US\$ min	GWh	GWh	US\$ min	US\$ min	
1	2	3	4	5	6	7	8	9	10	11	12	14	15	17	18
1997	0.2		94.8	6.6	2.93	3.3	6.43	0.5		94.8	6.6	2.93	3.30	6.73	0.30
1998	3.27		94.8	6.6	2.93	3.3	9.50	3		94.8	6.6	2.93	3.30	9.23	-0.27
1999	12.09	0.31	94.8	6.6	2.93	3.3	18.63	4	0.50	94.8	6.6	2.93	3.30	10.72	-7.91
2000		0.31	80.0	4.0	2.47	2	4.78	5	0.50	90	5.5	2.78	2.75	11.03	6.24
2001		0.31	80.0	4.0	2.47	2	4.78	4	0.50	87	5.5	2.69	2.75	9.93	5.15
2002		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2003		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2004		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2005		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2006		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2007		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2008		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2009		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2010		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2011		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2012		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2013		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2014		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2015		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2016		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2017		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2018		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2019		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2020		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09
2021		0.31	80.0	4.0	2.47	2	4.78		0.50	85	5.5	2.63	2.75	5.87	1.09

EIRR = 41.5%  
 NPV (i=10%) = 7.3  
 NPV (i=12%) = 5.93

**Table 3 - Nha Be Tao Dan 220 kV Cable & Substation - Economic Analysis**

Year	" with" Project ( cost)			"without" Project ( benefits)					Net Benefit  Mill \$
	Invest	O&M	Total Cost	Unservd Energy 110kV	Unservd Energy 22kV	Incremental Energy 110kV	Incremental Energy 22kV	Total Cost	
	US\$ min.	US\$ min.	US\$ min.	Gwh	Gwh	US\$ min.	US\$ min.	US\$ min.	
1997	0.2		0.20	0	0	0.0	0.0	0.00	-0.2
1998	34.80		34.80	0	0	0.0	0.0	0.00	-34.8
1999	24.30	0.99	25.29	0	0	0.0	0.0	0.00	-25.3
2000		0.99	0.99	228	165	1.7	3.0	4.74	3.8
2001		0.99	0.99	513	371	3.8	6.8	10.67	9.7
2002		0.99	0.99	1012	750	7.6	13.8	21.39	20.4
2003		0.99	0.99	1096	812	8.2	14.9	23.17	22.2
2004	2.40	0.99	3.39	1096	812	8.2	14.9	23.17	19.8
2005		0.99	0.99	1180	812	8.9	14.9	23.80	22.8
2006		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2007		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2008		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2009		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2010		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2011		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2012		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2013		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2014		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2015		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2016		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2017		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2018		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2019		0.99	0.99	3243	812	24.3	14.9	39.27	38.3
2020		0.99	0.99	3243	812	24.3	14.9	39.27	38.3

EIRR 27.6%  
 NPV( i=10%) 125.9  
 NPV (i=12%) 92.57

**Table 4 - Ha Long Distribution Rehabilitation - Economic Analysis**

Year	"with" Project (costs)							"without" Project (benefits)							Net Benefit US\$min
	Investment	O&M	Losses	Unserved Energy	Losses Value	Unserved Energy Value	Total Cost	Losses	Unserved Energy	Incremental Energy	Losses value	Unserved Energy Value	Incremental Energy Value	Total Cost	
	US\$min	US\$min	US\$min	US\$min	US\$min	US\$min	US\$min	GWh	GWh	GWh	US\$ min	US\$ min	US\$ min	US\$ min	
1997	0.20	0.00	23.9	2.65	1.72	1.3	3.2	23.9	2.7	0.0	1.71	1.3	0.00	3.0	-0.20
1998	5.52	0.00	23.9	2.65	1.71	1.3	8.6	23.9	2.7	0.0	1.71	1.3	0.00	3.0	-5.52
1999	9.08	0.00	23.9	1.51	1.72	0.8	11.6	28.5	3.2	0.0	2.05	1.6	0.00	3.6	-7.92
2000	1.90	0.33	24.5	1.66	1.76	0.8	4.8	32.0	3.6	21.2	2.30	1.8	0.48	4.6	-0.26
2001		0.33	25.0	1.79	1.80	0.9	3.0	35.3	3.9	37.2	2.54	2.0	0.85	5.3	2.32
2002		0.33	25.0	2.02	1.80	1.0	3.1	39.9	4.4	52.2	2.87	2.2	1.19	6.3	3.13
2003		0.33	25.8	2.28	1.85	1.1	3.3	45.1	5.0	73.2	3.24	2.5	1.66	7.4	4.08
2004		0.33	25.8	2.58	1.85	1.3	3.5	51.0	5.7	96.8	3.66	2.8	2.20	8.7	5.21
2005		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	123.5	4.14	3.2	2.80	10.1	6.26
2006		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2007		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2008		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2009		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2010		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2011		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2012		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2013		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2014		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2015		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2016		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2017		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2018		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2019		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94
2020		0.33	29.2	2.92	2.09	1.5	3.9	57.6	6.4	153.7	4.14	3.2	3.49	10.8	6.94

EIRR 24.8%  
 NPV (i=10%) 21.9  
 NPV (i=12%) 15.8

**Table 5 - Vinh Distribution Rehabilitation - Economic Analysis**

Year	"with" Project (costs)							"without" Project (benefits)							Net Benefit US\$ min
	Invest	O&M	Losses	Unserved Energy	Losses value	Unserved Energy Value	Total Cost	Losses	Unserved Energy	Incrementa Energy	Losses Value	Unserved Energy	Incremental Energy Value	Total Cost	
	US\$ min	US\$ min	GWh	GWh	US\$ min	US\$ min	US\$ min	GWh	GWh	GWh	US\$ min	US\$ min	US\$ min	US\$ min	
1997	0.20		15.0	1.6	1.07	0.78	2.1	15.0	1.6	0.0	1.07	0.78	0.00	1.9	-0.20
1998	5.20		16.5	1.7	1.19	0.84	7.2	16.5	1.7	0.0	1.19	0.84	0.00	2.0	-5.20
1999	9.00		17.8	1.8	1.28	0.88	11.2	17.8	1.8	0.0	1.28	0.88	0.00	2.2	-9.00
2000	1.60	0.32	17.8	1.6	1.28	0.81	4.0	17.8	1.6	79.0	1.28	0.81	1.79	3.9	-0.13
2001		0.32	19.4	1.8	1.39	0.92	2.6	26.6	2.9	98.3	1.91	1.43	2.23	5.6	2.94
2002		0.32	20.8	2.0	1.49	1.02	2.8	29.8	3.2	117.9	2.14	1.60	2.68	6.4	3.58
2003		0.32	22.0	2.3	1.58	1.13	3.0	33.0	3.5	137.4	2.37	1.77	3.12	7.3	4.23
2004		0.32	23.0	2.5	1.65	1.23	3.2	36.2	3.9	156.9	2.60	1.94	3.56	8.1	4.89
2005		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2006		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2007		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2008		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2009		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2010		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2011		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2012		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2013		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2014		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2015		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2016		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2017		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2018		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2019		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57
2020		0.32	23.9	2.7	1.72	1.33	3.4	39.3	4.2	176.5	2.82	2.11	4.01	8.9	5.57

**EIRR 22.9%**  
**NPV (i=10%) 17.3**  
**NPV (i=12%) 12.3**



**Table 6 - Vung Tau Distribution Rehabilitation - Economic Analysis**

Year	" with " Project (costs)							" without" Project (benefits)							Net Benefit Mill \$
	Investment	O&M	Loss	Unservd Energy	Losses Value	Unservd Energy Value	Total Cost	Loss	Unservd Energy	Incremental Energy	Losses value	Unservd Energy	Incremental Energy Value	Total Cost	
	US\$ min.	US\$ min.	GWh	GWh	US\$ min.	US\$ min.	US\$ min.	GWh	GWh	GWh	US\$ min	US\$ min	US\$ min	US\$ min	
1997	2.90		26.5	1.56	1.90	0.78	5.6	26.5	1.6	0.0	1.90	0.78	0.00	2.7	-2.90
1998	6.10		27.6	1.68	1.98	0.84	8.9	32.2	1.7	0.0	2.31	0.84	0.00	3.2	-5.77
1999	8.20	0.45	26.2	1.75	1.88	0.88	11.0	36.6	1.8	0.0	2.63	0.88	0.00	3.5	-7.45
2000	5.20	0.45	27.1	1.62	1.95	0.81	8.0	47.5	1.6	0.0	3.41	0.81	0.00	4.2	-3.74
2001		0.45	27.1	1.83	1.95	0.92	2.9	47.5	2.9	98.3	3.41	1.43	2.23	7.1	4.21
2002		0.45	27.1	2.04	1.95	1.02	3.0	47.5	3.2	117.9	3.41	1.60	2.68	7.7	4.72
2003		0.45	27.1	2.25	1.95	1.13	3.1	47.5	3.5	137.4	3.41	1.77	3.12	8.3	5.22
2004		0.45	27.1	2.45	1.95	1.23	3.2	47.5	3.9	156.9	3.41	1.94	3.56	8.9	5.74
2005		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	176.5	3.41	2.11	4.01	9.5	6.25
2006		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2007		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2008		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2009		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2010		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2011		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2012		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2013		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2014		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2015		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2016		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2017		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2018		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2019		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27
2020		0.45	27.1	2.65	1.95	1.33	3.3	47.5	4.2	177.2	3.41	2.11	4.02	9.5	6.27

EIRR 20.5%  
 NPV (i=10%) 17.9  
 NPV (i=12%) \$12.23



**Annex 5**  
**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Financial Summary for Revenue-Earning Project Entities**  
**Electricity of Vietnam**  
**Years Ending September: 1995 through 2000**  
**(In Billions of Current Dong)**

	1995	1996	1997	1998	1999	2000	Average
	Actual	Estimate	Forecast				Annual
							Growth
<b>Income Statement Items</b>							
Energy Sales (GWh)	11,193	13,286	15,211	17,041	20,612	23,892	16.4
Avg. Revenues (d/KWh)	591	613	663	680	820	820	7.0
Revenues	6,618	8,144	10,085	11,588	16,902	19,591	24.7
Operating Income	1,591	2,254	770	299	1,704	4,546	110.3
Net Income	1,156	1,638	420	5	721	2,664	2891.6
<b>Funds Statement Items</b>							
Internal Sources	2,567	2,832	3,012	4,620	4,914	7,003	23.8
Borrowings	368	2,126	6,554	5,369	5,699	7,590	141.4
Government Contribution	167	36	39	50	50	50	-8.4
Total Sources	3,102	4,994	9,605	10,039	10,663	14,643	40.3
Capital Expenditures	2,019	3,883	9,401	9,866	9,822	13,439	55.2
Working Capital Increase (Decrease)	848	733	-501	-664	-480	-553	-32.4
Debt Service	235	378	705	837	1,321	1,757	51.4
Total Applications	3,102	4,994	9,605	10,039	10,663	14,643	40.3
<b>Balance Sheet Items</b>							
Current Assets	6,650	3,197	2,826	2,565	3,537	4,847	0.4
Less Current Liabilities	4,350	1,570	1,905	2,913	4,959	5,738	19.3
Fixed Assets	18,669	22,746	30,112	36,624	42,727	51,596	22.7
Total Assets	20,969	24,373	31,033	36,276	41,305	50,705	19.4
Debt and Other Liabilities	183	3,841	10,465	15,670	20,446	27,648	457.4
Equity	20,786	20,532	20,567	20,606	20,859	23,057	2.2
Total Liabilities and Equity	20,969	24,373	31,032	36,276	41,305	50,705	19.4
<b>Financial Ratios</b>							
Operating Income as a							
% of Revenue	24.0	27.7	7.6	2.6	10.1	23.2	14.2
Net Income as a							
% of Revenue	17.5	20.1	4.2	0.0	4.3	13.6	8.4
Rate of Return on Revalued Net Fixed Ass	8.6	12.0	3.8	1.3	5.4	10.7	6.6
Debt Service Coverage	10.9	7.5	4.3	5.5	3.7	4.0	5.0
Self Financing Ratio	115.5	48.1	29.9	39.0	32.5	42.9	38.5
Current Ratio	1.5	2.0	1.5	0.9	0.7	0.8	1.2
Debt Equity Ratio (%)	0.9	18.7	50.9	76.0	98.0	119.9	72.7

**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Financial Summary for Revenue-Earning Project Entities**  
**Power Company 2**  
**Years Ending September: 1995 through 2000**  
**(In Billions of Current Dong)**

	1995	1996	1997	1998	1999	2000	Annual Average Growth
	Actual	Estimate	Forecast				
<b>Income Statement Items</b>							
Energy Sales (GWh)	2,458	2,948	3,400	3,978	4,654	5,445	17.3
Avg. Revenues (d/KWh)	541	611	659	678	678	678	4.7
Revenues	1,550	2,131	2,591	3,106	3,640	4,267	22.7
Operating Income	98	217	267	317	378	450	40.2
Net Income	74	163	185	211	255	309	38.1
<b>Funds Statement Items</b>							
Internal Sources	66	70	265	231	265	305	60.4
Borrowings	8	12	170	224	328	342	288.7
Government Contribution	0	0	10	0	0	0	0.0
Total Sources	74	82	445	455	593	647	99.5
Capital Expenditures	72	62	414	348	364	389	109.9
Working Capital Increase (Decrease)	2	20	17	83	204	233	286.6
Debt Service	0	0	14	14	25	25	1744.8
Total Applications	74	82	445	445	593	647	99.0
<b>Balance Sheet Items</b>							
Current Assets	448	563	575	730	962	1,231	22.9
Less Current Liabilities	294	389	384	457	484	520	12.7
Net Fixed Assets	527	551	749	1,063	1,477	1,931	30.4
Total Assets	681	725	940	1,336	1,955	2,642	31.9
Debt and Other Liabilities	0	12	182	395	713	1,043	428.2
Equity	681	713	758	941	1,242	1,599	19.2
Total Liabilities and Equity	681	725	940	1,336	1,955	2,642	32.0
<b>Financial Ratios</b>							
Operating Income as a % of Revenue	6.3	10.2	10.3	10.2	10.4	10.5	10.3
Net Income as a % of Revenue	4.8	7.6	7.1	6.8	7.0	7.2	7.2
Rate of Return on Revalued Net Fixed Assets (%)	18.6	39.4	35.6	29.8	25.6	23.3	30.7
Debt Service Coverage	n.a.	856.8	18.9	5.7	8.9	10.5	180.2
Self Financing Ratio	120	41.2	99.8	63.9	75.1	80.5	72.1
Current Ratio	1.5	1.4	1.5	1.6	2.0	2.4	1.8
Debt Equity Ratio	n.a.	0.0	0.2	0.4	0.6	0.7	0.4

**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Financial Summary for Revenue-Earning Project Entities**  
**Power Company 1**  
**Years Ending September: 1995 through 2000**  
**(In Billions of Current Dong)**

	1995 Actual	1996 Estimate	1997 Forecast	1998	1999	2000	Average Annual Growth
<b>Income Statement Items</b>							
Energy Sales (GWh)	3,646	4,218	4,640	5,197	5,820	6,520	12.3
Avg. Revenues (d/KWh)	487	542	588	588	588	588	4.0
Revenues	1,953	2,442	2,858	3,196	3,572	3,999	15.5
Operating Income	131	273	62	85	107	141	25.2
Net Income	120	205	46	63	80	111	19.2
<b>Funds Statement Items</b>							
Internal Sources	35	86	229	270	304	359	71.8
Borrowings	0	54	42	387	198	146	155.4
Government Contribution	262	154	34	0	0	0	-8.2
Total Sources	297	294	305	657	502	505	19.0
Capital Expenditures	297	229	196	573	406	350	22.4
Working Capital Increase (Decrease)	0	56	96	57	67	83	18.1
Debt Service	1	9	13	27	29	72	221.6
Total Applications	298	294	305	657	502	505	19.0
<b>Balance Sheet Items</b>							
Current Assets	1,220	712	791	857	930	1,009	-1.0
Less Current Liabilities	1,190	629	611	620	626	623	-9.6
Net Fixed Assets	1,299	1,600	1,689	2,077	2,230	2,305	12.5
Total Assets	1,329	1,683	1,869	2,314	2,534	2,691	15.4
Debt and Other Liabilities	3	57	99	487	685	831	0.0
Equity	1,326	1,626	1,770	1,827	1,849	1,860	7.3
Total Liabilities and Equity	1,329	1,683	1,869	2,314	2,534	2,691	15.4
<b>Financial Ratios</b>							
Operating Income as a % of Revenue	6.7	11.2	2.2	2.7	3.0	3.5	4.5
Net Income as a % of Revenue	6.1	8.4	1.6	2.0	2.2	2.8	3.4
Rate of Return on Revalued Net Fixed Assets (%)	9.8	28.8	5.8	7.4	8.6	11.0	12.3
Debt Service Coverage	35	6.1	13.4	8.7	8.8	4.1	8.2
Self Financing Ratio	12.9	20.4	47.5	54.6	53.6	63.3	47.9
Current Ratio	1.0	1.1	1.3	1.4	1.5	1.6	1.4
Debt Equity Ratio	0.0	0.0	0.1	0.3	0.4	0.4	0.2

**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Financial Summary for Revenue-Earning Project Entities**  
**Ho Chi Minh city Power Company**  
**Years Ending September: 1995 through 2000**  
**(In Billions of Current Dong)**

	1995	1996	1997	1998	1999	2000	Average
	Actual	Estimate	Forecast				Annual
							Growth
<b>Income Statement Items</b>							
Energy Sales (GWh)	2,815	3,433	3,935	4,645	5,435	6,350	17.7
Avg. Revenues (d/KWh)	592	682	750	825	908	990	10.9
Revenues	1,731	2,433	3,061	3,957	5,072	6,442	30.2
Operating Income	71	116	104	125	160	167	21.1
Net Income	50	84	69	80	99	100	18.2
<b>Funds Statement Items</b>							
Internal Sources	101	77	166	215	292	380	37.5
Borrowings	50	9	181	217	403	920	536.3
Government Contribution	0	118	185	190	210	220	18.7
Total Sources	151	204	532	622	905	1,520	65.3
Capital Expenditures	43	213	321	474	750	1,382	127.2
Working Capital Increase (Decrease)	107	-9	207	139	140	119	-510.7
Debt Service	1	0	4	9	15	19	529.6
Total Applications	151	204	532	622	905	1,520	65.2
<b>Balance Sheet Items</b>							
Current Assets	245	285	357	340	363	374	9.3
Less Current Liabilities	126	219	225	240	260	240	16.8
Net Fixed Assets	231	653	1,045	1,554	2,280	3,557	78.8
Total Assets	350	719	1,177	1,654	2,383	3,691	61.7
Debt and Other Liabilities	0	9	362	361	575	1,150	1020.3
Equity	350	710	815	1,293	1,808	2,541	51.3
Total Liabilities and Equity	350	719	1,177	1,654	2,383	3,691	61.7
<b>Financial Ratios</b>							
Operating Income as a							
% of Revenue	4.1	4.8	3.4	3.2	3.2	2.6	3.4
Net Income as a							
% of Revenue	2.9	3.5	2.3	2.0	2.0	1.6	2.2
Rate of Return on Revalued Net Fixed Assets (%)	30.7	17.8	10.0	8.0	7.0	4.7	9.5
Debt Service Coverage	50.1	549	26.5	27.8	19.5	18.6	128.3
Self Financing Ratio	9	27	30.3	46.8	32	29.9	33.2
Current Ratio	1.9	1.3	1.6	1.4	1.4	1.6	1.5
Debt Equity Ratio	0.0	0.0	0.4	0.3	0.3	0.5	0.3

## Financial Analysis

### Past Financial Performance

A summary of the financial performance of the consolidated accounts of EVN and the three implementing agencies, PC1, PC2 and HCMC PC is presented in the previous tables.

EVN's financial performance (FY95-96) since its creation has been satisfactory. Net revenues of about D 6.6 trillion in FY95, the first full year of its operations, reflected the financial operations of the various business units consolidated under EVN. Largely because of the high growth and rapid expansion of the Vietnamese economy, energy sales in FY96 increased by 19% from 11,193 Gwh to 13,286 Gwh and revenues by 23% from D 6.6 trillion to D 8.1 trillion. This allowed EVN to realize operating revenues during the period of D 2.3 trillion, sufficient to cover operating expenses and realize an operating margin of 28%. Net income of D 1.2 trillion in FY95 rose to D 1.6 trillion in FY96. EVN also recorded relatively high self financing ratios of 116% in FY95 and 48% in FY96, and rate of return on net fixed assets of 9% and 12%, respectively.

EVN's opening balance sheet showed gross fixed assets, representing generation, transmission, distribution and other assets (except land) of the power sector, of D 18.7 trillion. Until FY95, fixed assets have largely been financed by Government equity as the power companies have not incurred any significant long term debt. EVN's long term debt consists primarily of some term loans contracted by the previous PC2 in 1993 from local commercial banks. Total assets (net current assets and fixed assets) in FY95 of D 21 trillion increased to D 24.4 trillion in FY96 as a result of additional net fixed assets put in operation and capital work in progress. Financing of new assets came mainly from additional long term borrowing which grew from D 0.2 trillion in FY95 to D 3.8 trillion in FY96. Despite the new reliance on external long term debts to finance capital expansion, EVN's capital structure remained underleveraged, with new borrowings representing only 20% of total equity.

The past financial results of the PCs were also satisfactory. Power sales of PC1, PC2 and HCMCPC of 3,646 Gwh; 2,458 Gwh; and 2,815 Gwh, respectively, realized revenues of D 2 trillion, D 1.6 trillion, and D 1.7 trillion, respectively, in FY95. These revenues were sufficient to cover operating expenses and enabled PC1, PC2 and HCMCPC to earn income after taxes at the rate of 6%, 5%, and 3% of revenues, respectively. In FY96, the revenues of the PCs improved (PC1 by 25%, PC2 by 37%, and HCMCPC by 41%) and despite higher operating expenses, operating margins of 7%, 6% and 4% , respectively, were achieved.

The capital structure of the PCs consists primarily of Government equity and accumulated reserves. These financed assets half of which were fixed assets in operation including a small amount for capital work in progress. The PCs have maintained a high liquidity with current ratios in FY96 of 1.0x, 1.5x and 1.9x, for PC1, PC2 and HCMCPC, respectively. PC2 and HCMCPC carried huge stocks for other companies of EVN and rather than incur trade payables, they prepaid and advanced a generous amount for materials, supplies and services. On the other hand, PC1 carried a significant amount of receivables, D 0.3 trillion from customers and D 0.6 trillion from PC1's power supply companies.

### Financial Projections

Projections of the financial performance and the key financial indicators of EVN, PC1, PC2 and HCMC PC for the period FY97-00 are presented in the tables above.

The most significant financial objective of EVN and the PCs is to achieve satisfactory financial performance by maintaining a sound revenue position for financing operations and future capital expansion. To accomplish this, the adequacy and timing of progressive increases in electricity tariffs would be most crucial. The financial projections assume that tariffs levels would be sufficient to make a reasonable contribution to expansion after meeting their operating costs and debt service obligations. The projections also assume that EVN and the PCs are separate business entities with

EVN owning all the generation and transmission assets in the power system, and selling bulk power to PCs. The PCs own and operate the distribution assets in their individual territories, and purchase power from EVN for retailing to end-use consumers.

The future financial situation of EVN and the PCs will depend largely on the pace of the country's economic development and the resulting demand and sales increase, and the speed and efficiency with which EVN would be able to develop and finance its planned investment program. EVN's load forecast assumes that sales would increase from 13,286 Gwh in FY96 to 23,892 Gwh in FY00 --an average annual increase of about 16%. With projected reduction in system losses, rationalization of the power development program, and upward adjustment of tariffs to US¢ 7.0/kWh in FY99, electricity revenues will increase by an average of about 25% from D 8.1 trillion in FY96 to D 19.6 trillion in FY00. On the basis of these assumptions, the projected financial results of EVN and the PCs are satisfactory showing that sufficient revenues could be generated to cover all operating expenses (including depreciation), as well as interest expenses and income taxes. The forecasts also assume that EVN would be able to increase tariffs from the level of US¢5.7/kWh in FY97 to a level of US¢7.0/kWh in FY99, an increase of about 23%. With an average annual increase in tariffs of about 8% during the projected period, EVN would be able to finance an average of about 39% of its future investment from internal sources.

EVN is required under previous credit agreements to meet an annual target of a 30% SFR. EVN is projecting about US\$3.7 billion equivalent in capital expenditures during the period, in addition to some of the country's new generating plants being developed under Joint Ventures/Build-Operate-Transfer (BOT) arrangements. About 50% of that total is expected to be invested during FY97-98, as EVN begins implementation of several large plants, which EVN had been committed to develop. The financial performance of EVN during this critical period would be extremely stretched. Heavy operating expenses associated with new plants coming into service would result in a significant drop in the rate of return on revalued net fixed assets in operation from 12% in FY96 to 4% in FY97 and to 1% in FY98. EVN's financial projections show that if operating expenses increase by 8% to D 11.6 trillion in FY98, due to higher fuel costs, operating losses would be recorded. In this event, EVN would need to raise tariffs beyond the proposed level.

EVN's rates of return on revalued net fixed assets in operation (ROR) of 8% and 12% in FY95-96, respectively have been satisfactory because of sufficient financial returns and a modest rate base of about D 18.5 trillion to D 19 trillion in these years. However, projected RORs would drop to only 4% in FY97 and 1% in FY98. Because of substantial operating expenses associated with a rapidly expanding system, operating income is projected to drop from D 2.2 trillion in FY96 to D 0.8 trillion in FY97 and to bottom out to D 0.3 trillion in FY98. Combined with a growing net fixed asset base revalued at the rate of 6% annually would result in a deterioration of EVN's ROR. The financial performance is expected to rebound in FY99-00 when EVN is expected to achieve about D 1.7 trillion and D 4.5 trillion, respectively, in operating profits, and consequently, record an upswing in its ROR to 5% and 11%, respectively. Considering the initial relatively low asset base, the concentration of its assets in hydropower, and the need for extensive rehabilitation of plants and network, the average ROR for the projected period of 5.3% is acceptable.

The PC's internally generated cash would be enough to self-finance capital expenditures of D 1.8 trillion for PC1, D 1.6 trillion for PC2, and D 3.1 trillion for HCMCPC, projected for the period. The projected bulk tariffs ensure that EVN, PC2 and HCMCPC are capable of satisfying the required financial criteria for earlier IDA-approved projects. The PCs are less capital intensive than EVN; PC1 and PC2 have only moderate investment requirements for upgrading distribution networks in some urban towns, investments in low to medium voltage transmission in their respective areas of operation, and rural electrification. HCMC PC, however, is expected to borrow heavily from external sources for rehabilitation and expansion of distribution facilities in HCMC, the prime commercial city in Vietnam. The projections show that on average PC1, PC2 and HCMCPC could generate SFR of 55%, 80%, and 35%, respectively, and debt service coverage ratios of 8x, 11x, and 23x.



## **Electricity Tariffs**

Retail electricity tariffs, currently uniform across Vietnam, are established by the Government. In the current process, EVN develops a tariff proposal which is reviewed by the Ministry of Industry, and the State Price Committee before submitting to the Prime Minister and the National Assembly for final approval. There is no formal bulk power tariff for power sales from EVN to the PCs; however, there are internal bulk power prices at which electricity is sold from EVN to the five PCs. These internal bulk power prices are developed based on the estimated ability of the PCs to pay instead of the cost of generation and transmission of power supply to each PC. The formula used in determining bulk power prices encourage PCs to increase their capital investment and number of employees beyond the best interests of EVN. The bulk power prices paid by the PCs are as follows:

**Bulk Power Prices**  
(Dong/kWh)

PC	1995	1996	1997
PC1	300	299	307
PC2	380	380	424
PC3	244	252	272
Hanoi PC	400	398	448
HCMC PC	453	442	487

Existing electricity retail tariffs were rationalized and raised periodically since March 1992 when higher charges during the dry season were introduced for consumption above set levels, and special tariffs were introduced for foreigners and partially or wholly-owned foreign companies. Further upward revisions in the tariffs were implemented in August 1994, June 1995, April 1996, and May 1997. Currently the average tariff is about D 663/kWh, or about US\$ 5.7/kWh. The long run marginal cost (LRMC) of electricity was estimated in 1993 to be about US\$ 7.0/kWh (D 750/kWh) and the Government, through previous tariff adjustments and agreements reached with IDA, expressed and affirmed its commitment to gradually increasing tariffs to this level.

Current estimates of LRMC (average retail tariff) are in the range of US\$7.5 to 8.0/kWh. An average retail tariff level of about 90% of the LRMC by FY99 is not unreasonable, considering the Government's social objectives, as long as the sector could achieve an SFR of 30%. The tariff structure is such that average commercial tariff is about US\$11.5/kWh, industrial tariff about US\$7.5/kWh, large block domestic about US\$8.5/kWh; all these rates are pretty high and are set to achieve Government's social objectives (supplying electricity to poorer households with low consumption, social services and rural areas for which the tariffs range from US\$3.0 to US\$5.5/kWh). The Government has made significant increases in the tariffs in the last few years, often in the face of serious protests, and it would be unrealistic to expect the Government to raise tariffs at further accelerated rates. Efficient pricing of electricity (consistent with social objectives, and the need to maintain competitiveness of Vietnamese industry), would continue to be in the fore front of IDA's dialog with the Government.

## **Financing Plan**

EVN's power development plan for the period is large when compared to the modest capital expenditure of the power sector in the past. The capacity shortage was induced not only by demand growth but also by a lagging investment program. The four year investment program of D 43 trillion (including interest during construction) is projected to increase from D 3.9 trillion in FY96 to D 14 trillion in FY00 or an average annual increase of 46%. Consequently, the value of EVN's net fixed assets in operation for the period is projected to increase to about 3.0 times their 1996 levels. To finance this substantial build-up, EVN would largely rely on securing long term financing of about D 25 trillion.

During the FY97-00 period, EVN expects to meet 40% of its capital requirements from internally generated funds (net of debt servicing and working capital requirements). In addition to the IDA credit, it will need to borrow funds totalling 59% of its total cash requirements. It should have no problem borrowing these funds as it already has commitments for a large portion of its borrowing needs over the period.

EVN's financing plan is presented below:

**EVN Financing Plan, FY97-00**  
(Dong Billion)

<b>Capital Requirements:</b>	
Investments	40,331
IDC	2,197
<b>Total Capital Requirements</b>	<b>42,528</b>
<b>Sources of Funds:</b>	
Internal Cash Generation	19,549
Less: Debt Service	4,620
Working Capital Requirement	(2,198)
Net Internal Cash Generation	17,127
Borrowings	25,212
Government Contribution	189
<b>Total Sources of Funds</b>	<b>42,528</b>

In the past, the power sector had not borrowed long term funds since all funds had been provided through the Government budget. The assumptions on future financing show that no significant capital infusion would be contributed by the Government during the period. It is the Government's intention that EVN become self-sufficient from its inception. The decision by the Government to wean the power sector into financial independence through several steps would lay the foundation for a power sector that would be able to raise its own funds for capital expansion.

Based on the current organizational structure, EVN is the institution which has the requirement and the responsibility to borrow from multilateral and bilateral institutions for all the capital expansion projects in Vietnam. EVN's existing long term debt is only 1% of its total capitalization, however, further borrowing would be needed to finance EVN's planned investment program. EVN has received funding commitments for about 50% of its capital expenditures for the period from the following sources:

**EVN Investment Program, FY97-00**  
(Dong billion)

Project	Proposed Funding Source	Amount
Ba Ria Combined Cycle (306)	IDA	1,132
Song Hinh Hydropower	SIDA	1,131
Gas Fired Phu My 1	OECF	6,563
Gas Fired Phu My 2-1	IDA	2,371
Thermal Pha Lai 2	OECF	8,689
Ham Thuan Da My Hydropower	OECF	5,716
Dai Ninh Hydropower	IDA	1,149
Son La Hydropower	IDA/EVN	3,250
<b>Total</b>		<b>30,001</b>

The additional borrowings would ultimately raise EVN's level of debt financing. However, it would still represent an adequate level of leveraging as long term debt of a maximum of 120% of equity is not expected to exceed on average the acceptable IDA limits of 150% for the projected period. The investment program would also involve large debt service payments in the coming years amounting to about D 4.6 trillion. The financial projections show that EVN has a high debt servicing capability and would be able to maintain an appropriate level of debt servicing in the range of between 3.7-5.5 times for the period.

While the Government's policy is to no longer make any capital contributions to EVN except for socially-oriented projects, like rural electrification, it must recognize that the financial viability of EVN and its subsidiaries is well beyond EVN's control. There are problems which can negatively influence the financial situation of EVN --if projected demand fails to materialize, if the Government is unable or is delayed in making the necessary tariff adjustments, if the external financing for the investment program is not or only partially secured, or if other unforeseen problems arise. EVN needs to strengthen its capital base by building up substantial reserves to counteract these negative forces. The Government will also need to provide relief either through new equity investments, advances, deferment of cash transfers, or reimbursements and contributions in respect of some portions of the investment program. Additionally, the Government could accelerate the pace of opening the power sector to even greater private sector participation.

## Attachment 1 to Annex 5

### Review of Financial Management Systems EVN, PC1, PC2 and HCMC PC

#### Accounting System and Procedures

The establishment of the charter of EVN in 1995 coincided with the introduction by the Ministry of Finance (MOF) of modifications to the Vietnamese accounting system to make it more in line with Western accounting standards. EVN is required by the Government to comply with the "Business Accounting Policies" promulgated by the MOF which became effective on January 1, 1996. Accordingly, EVN has adopted, for all its business units, uniform accounting policies and procedures, documentation of transactions, and chart of accounts suitable to the power sector. Aside from MOF's Chart of Accounts, which describes the major accounts and guidelines on the accounting entries, and MOF proforma documents, there is no other documentation of accounting procedures for use by EVN and its business units. EVN's system is designated as a "mixed" accounting system whereby: (a) centralized accounts are maintained in the generation and transmission of electricity; (b) all power plants and transmission companies are dependent accounting units; and (c) consolidation of accounts take place only at the EVN level as a whole.

The adequacy of the existing accounting policies and financial procedures for EVN and its business units has been assessed in light of the Vietnam standards and International Accounting Standards (IAS). A comparison of major accounting policies between the Vietnam and IAS shows that, for the most part, the Business Accounting Policies promulgated by MOF for all Vietnamese enterprises and adopted by EVN, conform with IAS. **Table 1** provides an assessment of the various accounting and financial systems at EVN and the PCs. However, it should be noted that certain policies are still at variance with IAS, particularly: (a) accounting for foreign currency/translation; (b) fixed asset capitalization; (c) fixed asset depreciable amount, rate, and method; (d) amortization of intangible assets; (e) amortization of organization expense; (f) long term investment; (g) reporting requirement; (h) accounting framework; and (i) audit.

#### Reporting and Management Information System

The guidelines for EVN's project development and procedures, accounting systems and practices, information reporting, approval process and decision-making are extensive and reflect primarily a "top down" centralized approach to management control and decision-making. The reason for the top-heavy approach seems to be the lingering doubts as to the extent to which delegation to the business units can be justified. The management reporting system has evolved primarily in response to existing external reporting requirements of regulatory bodies and is used by the Government and EVN for strict monitoring of business units. Information is exchanged within EVN through written reports and the computer network. Access to financial data is highly restricted and centralized.

The current chart of accounts used by EVN and its business units are grouped in a traditional way that meets the recording and reporting requirements of MOF but is not sufficient for the purpose of monitoring transactions, internal reporting requirements, and management review and analysis. Under the current accounting system, all EVN dependent accounting units prepare and submit accounting and other financial reports including their financial statements to EVN monthly while independent accounting units submit theirs quarterly. EVN's Accounting Department reviews the reports prior to submission to EVN's Management Board for consolidation. EVN's computerized accounting system, while currently in use, is still under evaluation and improvements are being introduced as necessary. The PCs maintain a comprehensive accounting system and have their own: (a) accounting departments and staff; and (b) Electronic Data Processing Departments acting as accounting computer service centers for all their other departments. While information is transferred electronically to EVN for consolidation on a regular basis, it is not integrated with the EVN accounting system.

EVN has adopted a fairly liberal policy, in terms of information reporting, allowing independent units to develop their own system, and consequently, this has led to the development and implementation of heterogeneous satellite systems. EVN's Computer Center oversees all system planning and development activities for EVN and all dependent units. The PCs, being independent units, have their own Information Systems Department. EVN plans to develop an information system strategy that would provide the detailed road map for information technology and to establish an Information Systems Committee, with representatives from all business units, to oversee and coordinate the formulation of strategies, plans and policies for group-wide computerization initiatives. EVN is seeking financial assistance from multi-lateral agencies to fund an effective information technology strategy and master plan to support its future business needs.

### Internal Control System

Currently, EVN relies heavily on direct supervision, detailed reporting, and authorization from top management for internal control. There is no internal audit department in the whole EVN organization and departmental functions do not allow for proper segregation to ensure proper checks and balances and delineation of responsibilities. There are a number of control weaknesses, particularly, in the meter reading, billing and collection procedures of the PCs. Internal reviews, which are largely reactive, are conducted as follows: (a) inspection on compliance with EVN policies and Government rules and regulations are done by the Inspection Department with a team composed of selected representatives from the various business units; (b) inspection on certain activities of business units by an "ad hoc" inspection team selected by the Director General; (c) accounting supervision by the Finance and Accounting Department team; and (d) inspections directed by the Management Board and by the Control Section of the Board. Inspections are conducted based on the guidelines of the Government and is focused on the review of plans, expenditures, contracts and compliance.

EVN's internal review system is not satisfactory and could frustrate the conduct of an independent and objective review due to staff not having the proper audit training required of an internal auditor and lack of participation in the audit planning. The Inspection Department, responsible for internal control, has two staff and is headed by a Director who is a mechanical engineer. Most of the members of the teams do not have proper audit training.

EVN is currently considering the recommendations of an ADB-financed study (Improvement of Accounting and Financial System) to establish an internal audit department that would have the following functions: (a) evaluation of internal controls in the areas of accounting, treasury and operations; (b) review of current operations and programs; (c) assess departments' compliance with corporate policies and procedures; (d) documentation of internal audit findings; and (e) provide recommendations for improvement. It is also implementing the immediate, short and medium term recommendations of the study to improve the meter reading, billing and collection procedures and control.

### Quality of Staff

EVN's management and staff are technically competent and qualified, but are not equipped with modern tools and are not proficient with modern management practices. Senior manager roles are filled mostly by engineers and ex-government officers. The senior and middle management of EVN and the PCs are generally strong on technical competency; of the 72 officers, about 63 are engineers, 7 are economists, and 2 are accountants. This statistic, reflecting EVN's engineering competence and priorities, is a reminder that finance and accounting backgrounds are not given adequate importance in the organization. The position of the Chief Financial Officer/Chief Accountant within higher management is either unclear or does not receive due recognition. With the expected rapid expansion of the power sector and the requirements of decentralized financial decision-making, the position of the Chief Financial Officer/Chief Accountant will be crucial and will need to be reviewed.

At the moment and until the major program of upgrading the training facilities and staff skills of the National Training Center (financed under the first IDA Credit) is implemented, training had largely been of a technical nature.

There is rarely any training in management, accounting and finance, and organization skills for staff nor is there a training plan even for its top and middle management who have finance and accounting responsibilities.

The accounting staff of EVN and the PCs are generally competent and are able to carry out their tasks of account keeping and reporting in accordance with the requirements of the Government. The competence of the accounting staff, their eagerness to learn the Western accounting system, and appreciation of Bank required financial calculations should considerably facilitate the improvement of the accounting system and implementation of reforms recommended by the ADB study. While EVN is already involved on a limited scale with other successful public electricity utilities, undertaking formal and long term linkages with other commercially owned utilities in a bigger scale, would be a good source of commercially-oriented expertise. Additionally, the staff could benefit from external training in commercial accounting systems, management reporting, budget and finance. EVN will submit to IDA a training plan providing a detailed program of activities and training courses, participants, and cost for staff development.

#### Procurement Contract Management Information

According to EVN guidelines, the process of procurement for major contracts is as follows: (a) consultants are selected to assist in the preparation of bidding documents and evaluation; (b) bids are prepared in accordance with the consultants' recommendation following strict Bank guidelines; (c) bidding evaluation is undertaken by a selection committee in EVN that prepares a report for approval by EVN management; (d) the evaluation report is submitted to IDA for approval; (e) once a no-objection letter is received from IDA, the report is then submitted to the Ministry of Industry (MOI) and the Ministry of Planning and Industry (MPI) for government approval; (f) an import license is obtained from the Ministry of Trade after Government's approval of the contract; (g) contract implementation is assigned to the respective Management Board or PC; (h) in case of contract dispute, settlement and negotiation are taken up directly by EVN with contractors; and (i) contract monitoring within EVN is done by the Export/Import Department and informs management of any procurement delays.

While attempts at streamlining the procurement procedures in EVN has been made to make it more responsive and in line with Bank guidelines, the existing procurement system is still not adequate to provide information and proper monitoring for management control, planning and decision making. While the procurement procedures are laid out, implementation is carried out by seven departments within EVN. There is no single unit or department within EVN that coordinates all the procurement activities of these departments. Furthermore, the absence of more frequent procurement reporting management and statistics results in delays not being reported to senior management until at least a quarter later. The existing system is inadequate. A program designed to improve the procurement process in EVN is now underway. Under the program, EVN would conduct a review of 100 or so IDA-financed contracts already placed and analysis of the major causes of procurement delays. Benchmarks would then be established for each step in the process that would provide a reasonable amount of time needed to move a contract at each procurement stage. These would serve as targets for future contract processing and any delays would be flagged for management's attention. EVN would, under this Project, appoint a Procurement Monitoring Group whose function would be to monitor procurement schedules against the established benchmarks and alert EVN management of any delays or potential bottlenecks in the process. A computer program for procurement monitoring developed for EVN with the assistance of IDA, would also facilitate proper management planning and control and streamline the procurement procedure.

#### Audit Arrangements

Until recently, there was no independent external audit of EVN. The Government does not require the annual financial statements of the consolidated EVN and the independent business units to be published. The consolidated financial accounts of EVN are submitted to the MOI, MOF and the Tax Department for review and approval. MOF audits are used to determine tax liabilities, scheduled payments of "state-rented" capital, and other financial matters.

As required under earlier IDA credits, EVN entered into a Service Contract in October 1996 for the audit of the financial statements of EVN and its three affiliated companies, PC2, PC3 and HCMC PC. The contract called for a full audit of EVN's financial accounts for 1996 (covering accounts for 20% of EVN's units and representing 70% of its production capacity) including: (a) a review of the accounting system and internal control; (b) examination and verification of Special Accounts associated with the IDA credit; (c) substantive tests of units to be audited; and (d) issuance of an audit report and a management letter. The auditors' report would give an opinion as to the fairness and reasonableness of presentation of the financial statements, in accordance with IAS. A separate management letter would identify any material weakness in accounting and internal control, report on compliance of financial covenants of the Credit and Project Agreements, and communicate matters that might have a significant impact on the implementation of the project.

The audit field work was completed in October 1997 and the audit of the financial statements and special account and the report of compliance with IDA covenants were submitted to IDA in November 1997 along with the audit report, auditor's opinion and management letter.

## Attachment 2 to Annex 5

### Action Plan for Improving the Financial Management Systems EVN, PC1, PC2 and HCMCPC

#### Accounting System and Procedures

For EVN:

- Modify the existing chart of accounts with approval of MOF by March 1999;

Develop and implement by December 1998:

- An inventory management system;
- A budgetary control system for variance analysis;
- New treasury and cash management policies and procedures for managing funds flow relating to loans, projects, and financing investments;
- New project management policies and procedures for detailed monitoring of transactions of projects in progress and related expenditures;
- New loans management policies and procedures for monitoring loan terms of payment schedule and interest calculation;
- New fixed assets management policies and procedures.

For the PCs:

Develop and implement by December 1998:

- A customer service system for management and analysis, meter installation and disconnection, and integration with billing, collection and accounts receivable;
- An accounts receivable system for analyzing outstanding balances, preparing reminders, and notifying disconnection of overdue accounts;
- Improved billing and collection system;
- Improved inventory management system of PC2 and computerize the system of PC1 and HCMC PC;
- An accounts payable system that is integrated with inventory system to reconcile invoices with purchase order and goods receipt;
- Improved fixed asset management policies and procedures;
- A budgetary control system for variance analysis;
- An integrated accounting system.

#### Financial Reporting and Information System

- Develop an information system strategy for information technology by December 1999;
- Establish Information Systems Committee with representatives from all business units to oversee and coordinate formulation of strategies, plans and policies for group-wide computerization initiatives by December 1998.

#### Internal Control System

- Establish an internal audit department by December 1998 that would evaluate internal controls, review current operations, assess departments' compliance with policies and procedures, document internal audit findings and provide recommendations for improvement of control systems;



- Implement the improvements to the meter reading, billing, and collection procedures and control by December 31, 1998.

#### Quality of Staff

By December 1998:

- Undertake formal and long term linkages with other commercial-oriented utilities to develop expertise;
- Develop an external training program for staff in commercial accounting systems, management reporting, budget and finance;
- Submit a training plan providing a detailed program of activities and training courses, participants and cost for staff development.

#### Procurement Contract Management Information

By June 1998:

- Appoint a Procurement Monitoring Group composed of representatives from MOI and EVN to monitor the procurement process and alert management of delays;
- Implement a computer program for procurement monitoring.

**TABLE 1**  
**EVN and Dependent Units**

<b>Management Systems</b>	<b>Status</b>	<b>Assessment</b>
Procurement Monitoring	Not currently available, but being developed	Required, but more essential for EVN generation and transmission companies.
Inventory Management	Not available	Required, currently only physical count using stock cards in use.
Accounts Payable	Available	To be improved, with emphasis on: (a) integration of procurement and inventory; (b) analysis of outstanding invoices; and (c) derive payable schedule for cash flow planning.
Payroll	Available	Satisfactory, EVN employees being always paid in cash.
Fixed Assets	Available	Satisfactory
Budgetary Control	Not available	Required particularly for variance analysis.
Treasury and Cash Management	Partially available	To be improved, for managing funds flow relating to loans, projects, and financing investments. Currently, system can account for historical cash movements but not for future funds planning.
Project Cost Management	Not available	Required especially for Project Management Boards for detailed monitoring of transactions of project in progress and related expenditures.
Accounts Receivable	Available	To be improved, especially aging analysis, receivable schedule, and cash flow planning.
Loans Management	Not available	Required particularly for monitoring loan terms of payment schedule and interest calculation.
General Ledger	Available	To be improved with approval of MOF for chart of accounts expansion.
Company Consolidation	Not available	Required but need to address the file format of the financial data submitted from business units.

**PC1, PC2 and HCMCPC**

<b>Management System</b>	<b>Status</b>	<b>Assessment</b>
Customer Service	Not available	Required for customer management and analysis, meter installation and disconnection, and integration with billing, collection and accounts receivable.
Billing and Collection	Available	To be improved. Current system cannot print bills and customer information, and match payment to bills for generating outstanding balances.
Accounts Receivable	Not available	Required for analyzing outstanding balances, preparing reminders, and notifying disconnection of overdue accounts.
Procurement	Not currently available but being developed	Required.
Inventory Management	Partly available	Computerized in PC2 and PC3.
Accounts Payable	Not available	Required especially integration with procurement and inventory systems to reconcile invoices with Purchase Order and goods receipt.
Fixed Assets	Partly available	Computerized for PC2 and PC3.
Budgetary Control	Not available	Required for variance analysis.
General Ledger	Available but not in use	A computerized accounting system has been developed pending modifications to comply with MOF requirements.



**Annex 6  
Vietnam**

**Transmission, Distribution and Disaster Reconstruction Project  
Procurement and Disbursement Arrangements<sup>1</sup>**

**Procurement**

Almost 99% (US\$187 million equivalent) of the IDA credit of US\$189 million equivalent would be used for financing goods procured through International Competitive Bidding (ICB) using the Bank guidelines published in January 1995 and revised in January 1996 and August 1996. In the evaluation of bids obtained following ICB procedures, a margin of preference equal to 15% of the CIF bid price of imported goods or the actual customs duties and import taxes, whichever is less, will be allowed for domestic manufactures. About 1% (US\$2.0 million equivalent) of the credit amount would be used for financing consulting services procured following the Guidelines for the Selection and Employment of Consultants by World Bank Borrowers, January 1997.

The bid documents would follow the text of the Bank's Standard Bidding Documents. The invitation to bid for each contract estimated to cost US\$10 million equivalent or more shall be advertised in accordance with the procedures applicable to large contracts under paragraph 2.8 of the Bank's procurement guidelines. All bid documents, contract award recommendations and contracts for goods and services would be subject to prior review and approval by IDA (**Table B**). The procurement packages are foreseen to be: (a) 1, for supply and installation on single responsibility basis; (b) 19, for supply of goods; and (c) 2, for consulting services, each involving about 35 staff-months of effort, using quality-based selection method.

Civil and installation work for transmission lines, substations and distribution systems would be contracted to local firms through a competitive bidding process satisfactory to IDA. Such local contracts would not be financed from the IDA credit.

**Table A** summarizes the procurement arrangements for the components expected to be financed out of the proposed IDA credit. A Procurement Plan is given in **Attachment 1** and functions of a Procurement Monitoring Group are described in **Attachment 2**.

**Disbursement**

The IDA credit would be disbursed against: (a) 100% of foreign expenditures, or 100% of local expenditures (ex-factory cost) for goods procured through ICB; (b) 50% of local expenditures for other items procured locally; and (c) 100% of expenditures for consulting services, excluding taxes. As no contract is expected to be less than about US\$200,000 equivalent, Statement of Expenditures (SOE) procedures would not be followed. To facilitate disbursements, four Special Accounts would be established in US currency for EVN, HCMCPC, PC1 and PC2 on terms and conditions satisfactory to IDA with deposits of US\$2.0 million (EVN), US\$1.0 million (HCMCPC), US\$0.5 million (PC1), and US\$0.6 million (PC2). Replenishment applications should be submitted monthly or when the account is drawn by 30% of the authorized allocation, whichever occurs first. For withdrawal outside of the Special Accounts (applications for direct payment or for issuance of Special Commitments) a minimum application value of 20% of the authorized allocation of the Special Accounts would be observed.

Retroactive financing would be permitted to the extent of US\$10.0 million equivalent for payments made, prior to the date of the Credit Agreement but after October 3, 1997 (the appraisal date), for contracting urgently required goods and consulting services. This is necessary to meet the project implementation schedule.

The Project is expected to be completed by December 31, 2001 and the closing date for the Credit would be June 30, 2002.

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<sup>1</sup> For the Transmission and Distribution Component, except as otherwise noted.

**Table A: SUMMARY OF PROCUREMENT ARRANGEMENTS /a**  
**(Transmission and Distribution Component)**  
**(US\$ million)**

	ICB	Other /b	NIF/c	Total Cost
<b>EVN</b>				
<b>Goods</b>				
500 kV Pleiku-Phulam Line	70.0	-	35.6	105.6
	(70.0)	-	-	(70.0)
500 kV Pleiku, Phulam Substations	32.5	-	6.0	38.5
	(32.5)	-	-	(32.5)
500 kV Ha Tinh Substation	-	-	16.0	16.0
<b>Consultancies</b>				
Design/Supervision	-	1.0	-	1.0
	-	(1.0)	-	(1.0)
<b>Technical Assistance</b>				
Regulatory Framework	-	0.8	-	0.8
	-	-	-	-
<b>Miscellaneous</b>				
Eng. and Admin. Overheads	-	-	8.2	8.2
Duties and Taxes	-	-	4.5	4.5
Compensation	-	-	7.7	7.7
<b>Total</b>	<b>102.5</b>	<b>1.8</b>	<b>78.0</b>	<b>182.3</b>
	(102.5)	(1.0)	(0.0)	(103.5)
<b>HCMCPC</b>				
<b>Goods</b>				
220 kV Nha Be Tao Dan Line	30.0	-	2.8	32.8
	(30.0)	-	-	(30.0)
220 kV Tao Dan Substation	15.0	-	2.0	17.0
	(15.0)	-	-	(15.0)
<b>Consultancies</b>				
Design/Supervision	-	1.0	-	1.0
	-	(1.0)	-	(1.0)
<b>Miscellaneous</b>				
Eng. and Admin. Overheads	-	-	2.9	2.9
Duties and Taxes	-	-	1.3	1.3
Compensation	-	-	2.0	2.0
<b>Total</b>	<b>45.0</b>	<b>1.0</b>	<b>11.0</b>	<b>57.0</b>
	(45.0)	(1.0)	(0.0)	(46.0)
<b>Power Company 1 (PC-1)</b>				
<b>Goods</b>				
Ha Long City Distribution	11.5	-	4.3	15.8
	(11.5)	-	-	(11.5)
Vinh City Distribution	11.5	-	4.3	14.3
	(11.5)	-	-	(11.5)

	ICB	Other /b	NIF/c	Total Cost
<b>Miscellaneous</b>				
Eng. and Admin. Overheads	-	-	2.0	2.0
Duties and Taxes	-	-	1.0	1.0
Compensation	-	-	2.4	2.4
<b>Total</b>	<b>23.0</b>	<b>0.0</b>	<b>14.0</b>	<b>37.0</b>
	(23.0)	0.0	(0.0)	(23.0)
<b>Power Company 2 (PC2)</b>				
<b>Goods</b>				
Vung Tau City Distribution	16.5	-	6.5	23.0
	(16.5)	-	-	(16.5)
<b>Miscellaneous</b>				
Eng. and Admin. Overheads	-	-	1.1	1.1
Duties and Taxes	-	-	0.6	0.6
Compensation	-	-	0.8	0.8
<b>Total</b>	<b>16.5</b>	<b>0.0</b>	<b>2.0</b>	<b>25.5</b>
	(16.5)	(0.0)	(0.0)	(16.5)
<b>Demand Side Management</b>	-	-	4.5	4.5
<b>Interest During Construction</b>	-	-	12.7	12.7
<b>Grand Total</b>	<b>187.0</b>	<b>2.8</b>	<b>129.2</b>	<b>319.0</b>
	(187.0)	(2.0)	(0.0)	(189.0)

/a Figures in parenthesis refer to amounts to be financed from the IDA credit.

/b Others - Procurement of consulting services.

/c NIF - Not IDA Financed.

**Table B: Thresholds for Procurement Methods and Prior Review** /a

Expenditure Category	Contract Value (Threshold)	Procurement Method	Contracts Subject to Prior Review
1. <u>Goods</u>	\$0.0 million	ICB	All contracts will be subject to prior review.
2. <u>Consultancies</u>	\$0.0 million	Bank guidelines	All contracts will be subject to prior review.
<u>Total</u>	\$189 million		

/a Also applicable to Disaster Reconstruction Component.

**Table C: Allocation of Credit Proceeds**

<b>Category</b>	<b>Amount of the Credit Allocated (Expressed in (SDR Equivalent))</b>	<b>% of Expenditures to be Financed</b>
<b>Electricity of Vietnam</b>		
(1) Goods (Part A)	66,400,000	100% of foreign expenditures, 100% of local expenditures (ex-factory cost) and 50% of local expenditures for other items procured locally.
(2) Consulting Services (Part A)	730,000	
<b>Total</b>	<b>67,130,000</b>	100%
<b>Ho Chi Minh City Power Company</b>		
(1) Goods (Part C)	32,650,000	100% of foreign expenditures, 100% of local expenditures (ex-factory cost) and 50% of local expenditures for other items procured locally.
(2) Consulting Services (Part C)	730,000	
<b>Total</b>	<b>33,380,000</b>	100%
<b>Power Company No. 1</b>		
(1) Goods (Part D (1))	7,630,000	100% of foreign expenditures, 100% of local expenditures (ex-factory cost) and 50% of local expenditures for other items procured locally.
(Part D (2))	7,630,000	
<b>Total</b>	<b>15,260,000</b>	
<b>Power Company No. 2</b>		
(1) Goods (Part D (3))	10,530,000	100% of foreign expenditures, 100% of local expenditures(ex-factory cost) and 50% of local expenditures for other items procured locally.
Goods (Part G)	7,200,000	
<b>Total</b>	<b>17,730,000</b>	
(3) Unallocated	<b>10,900,000</b>	
<b>Grand Total</b>	<b>144,400,000</b>	
Part A <sup>/a</sup>	500 kV Pleiku-Phulam Transmission Line	
Part C	220 kV Nha Be - Tao Dan System	
Part D (1)	Ha Long Distribution	
Part D (2)	Vinh Distribution	
Part D (3)	Vung Tau Distribution	
Part G	Disaster Reconstruction	

<sup>/a</sup> Refer to Project Description in Legal Documents.



**Attachment 1 to Annex 6**

**Procurement Plan**

The procurement plan showing the key dates in Gantt-chart form is attached. The following table shows the key dates for the 22 procurement packages of which 21 are proposed for IDA financing and one for the electrical equipment of the Ha Tinh substation for financing by SIDA. Of the 21 packages for IDA financing, 1 for the Tao Dan substation will be on a single responsibility supply and erect basis, the remaining 20 contracts will be for supply of equipment and materials and supervision where necessary.

**Procurement Schedule for Single Responsibility Supply and Install Contract**

The key dates for procurement under turnkey contract of the Tao Dan GIS substation are given below:

No.	Activity	Duration (months)	Start	Finish
1.	Tao Dan GIS Substation (US\$15 mln).	21	3/1998	11/1999

**Procurement Schedule for Supply of Services and Equipment/Materials**

The key dates for supply of consultant services, and equipment and materials, for transmission lines and substations are given in the following table.

No.	Activity	Duration (months)	Start	Finish
	<b>A. 500 kV Pleiku-Phulam Transmission Line</b>			
1.	Consultant Contract for Design and Bid Preparation Assistance (US\$1 mln.)	13	10/1997	11/1998
2.	Steel Towers, Steel Bars and Related Materials (US\$30 mln.)	14	07/1998	09/1999
3.	Aluminum Conductors (US\$20 mln.)	16	07/1998	11/1999
4.	Insulators and Fittings (US\$10 mln.)	14	07/1998	09/1999
5.	Optical Cable (US\$9 mln.)	14	04/1998	06/1999
6.	(a) Communication Equip. (US\$4.5 mln.) (b) Control/Dispatch Equip. (US\$4.5 mln)	14	07/1998	09/1999
7.	Compensators, Breakers and Related Equipment (US\$24.5 mln)	19	04/1998	11/1999

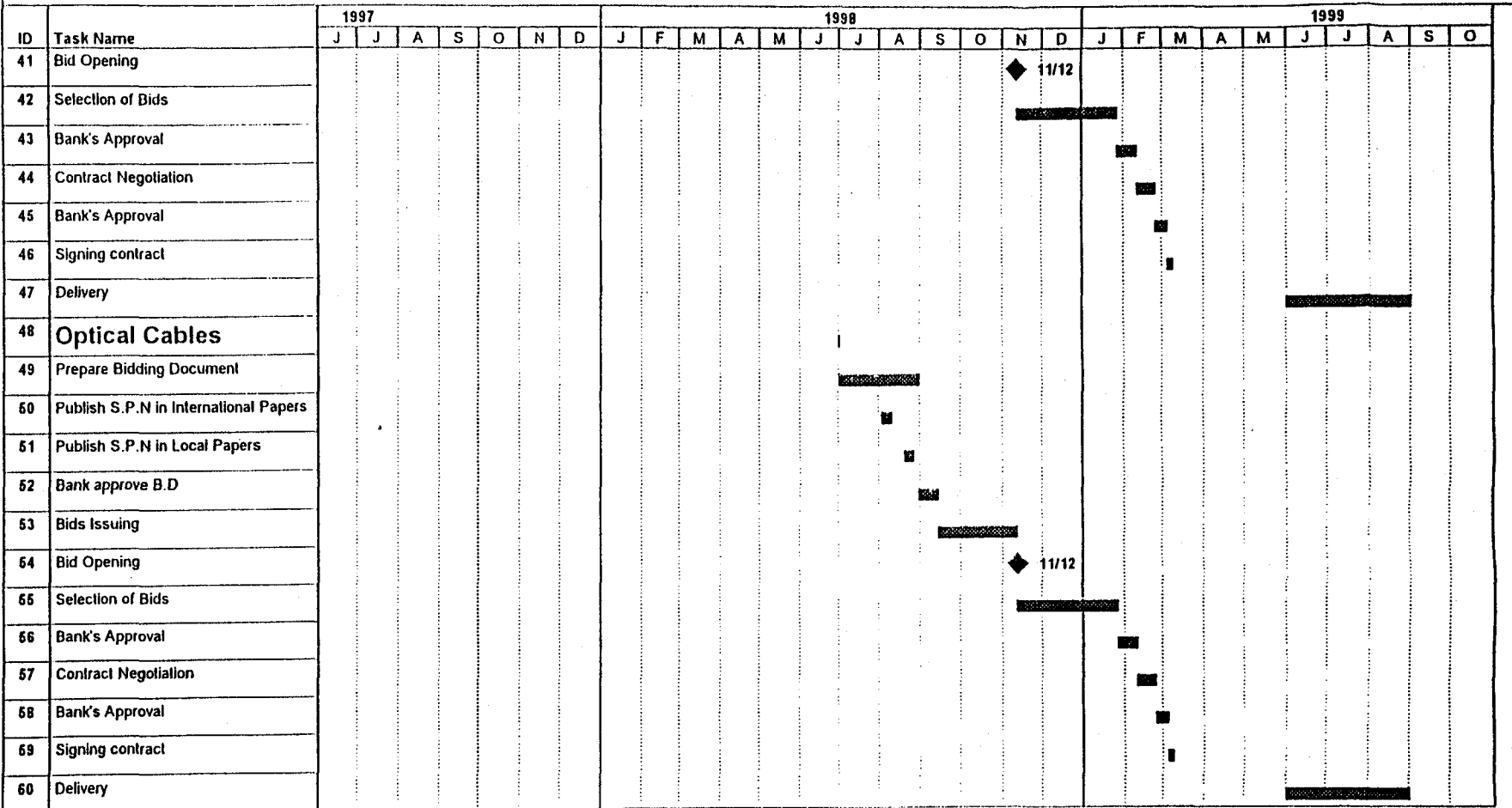
No.	Activity	Duration (months)	Start	Finish
	<b>B. 500 kV Ha Tinh Substation (SIDA)</b>			
8.	Transformers and Associated Electrical Equipment (US\$13 mln)	18	10/1997	06/1999
	<b>C. 220 kV Nha Be - Tao Dan T/L and Tao Dan GIS Substation</b>			
9.	Consultant Contract for Design and Bid Preparation Assistance (US\$1 mln.)	5	10/1997	03/1998
10.	220 kV Underground Cable and Accessories (US\$29.4 mln.)	20	03/1998	11/1999
11.	Steel Towers, Conductors, and Related Equipment for 220 kV Overhead T/L (US\$0.6 mln.)	20	03/1998	11/1999
	<b>D. Rehabilitation of Distribution Network:</b>			
	<b>(a) Ha Long City (US\$10 mln. one lot)</b>			
12.	110 kV Transformers and Associated Equipment for Substations	23	11/1997	10/1999
13.	22/0.4 kV Transformers for Distribution Network	23	11/1997	10/1999
14.	Equipment, Meters and Materials for 22/0.4 kV Network and Communication System	23	11/1997	10/1999
	<b>(b) Vinh City (US\$13 mln. one lot)</b>			
15.	22/0.4 kV Transformers	22	11/1997	09/1999
16.	Electrical Equipment, Meters and Related Materials.	22	11/1997	09/1999
17.	(a) 22 kV Cable; (b) 35 KV Conductors	22	11/1997	09/1999
18.	Training facilities	22	11/1997	09/1999
	<b>(c) Vung Tau City (US\$16.5 mln. one lot)</b>			
19.	22/0.4 kV Transformers	883	11/1997	09/1999
20.	22 kV Cable and Related Equipment	883	11/1997	09/1999
21.	Insulated Conductors, 0.4 kV Stranded Cable, ABC Cable and Accessories	883	11/1997	09/1999
22.	(a) Meters, Communication Equipment (b) Training facilities	883	11/1997	09/1999

T/L = Transmission Line





### Procurement Plan for Pleiku-Phu lam 500 kV Transmission Line

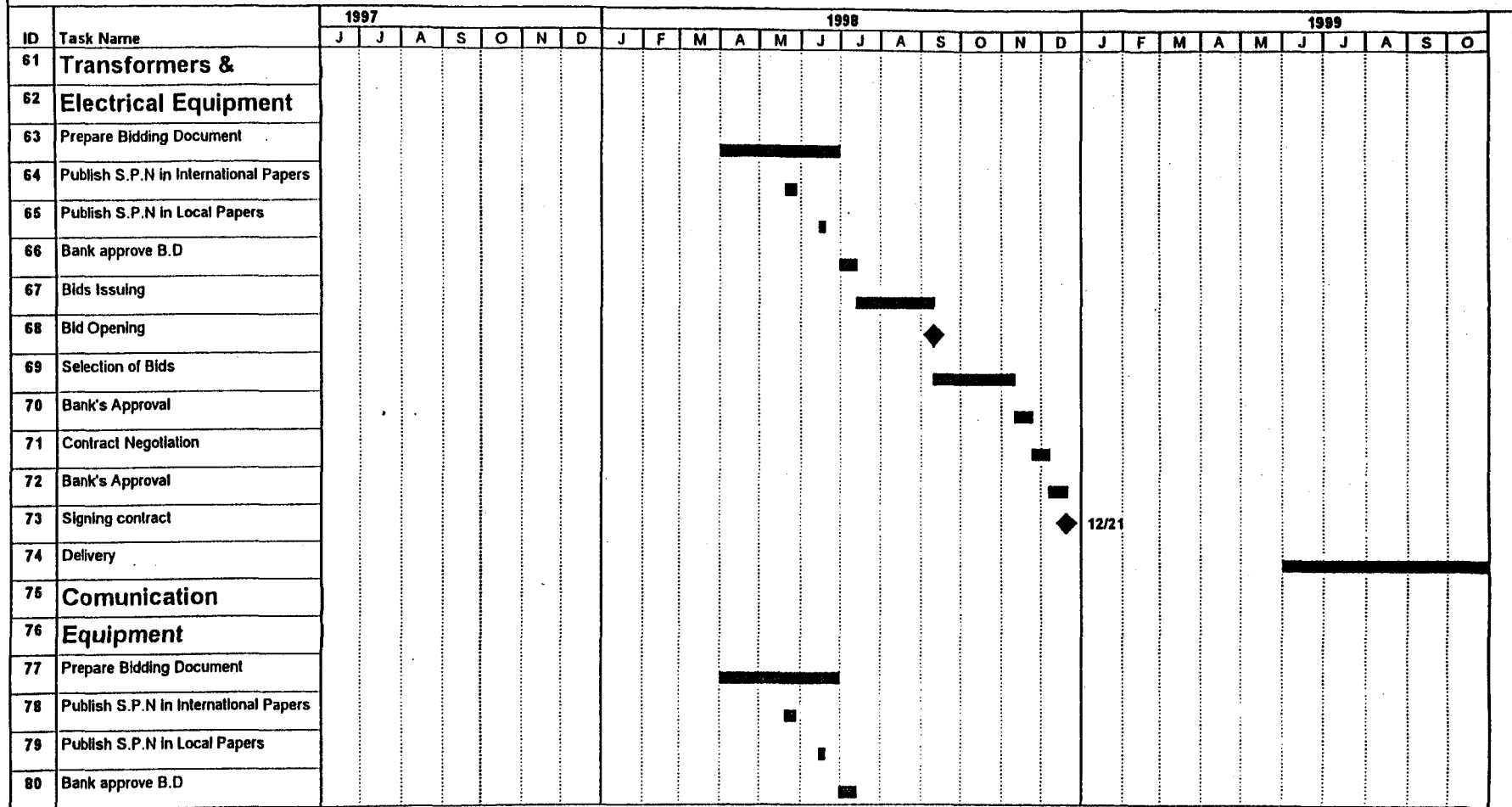


Project: TDDP  
Date: Sep 30 '97

Task		Summary		Rolled Up Progress	
Progress		Rolled Up Task			
Milestone	◆	Rolled Up Milestone	◇		

V.T.Hung

### Procurement Plan for Pleiku-Phu lam 500 kV Transmission Line



Project: TDDP  
Date: Sep 30 '97

Task		Summary		Rolled Up Progress	
Progress		Rolled Up Task			
Milestone		Rolled Up Milestone			

V.T.Hung

### Procurement Plan for Pleiku-Phu lam 500 kV Transmission Line

ID	Task Name	1997							1998												1999								
		J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
81	Bids Issuing																												
82	Bid Opening																												
83	Selection of Bids																												
84	Bank's Approval																												
85	Contract Negotiation																												
86	Bank's Approval																												
87	Signing contract																												
88	Delivery																												

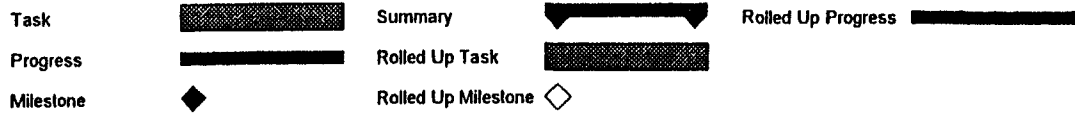
Project: TDDP Date: Sep 30 '97	Task	Summary	Rolled Up Progress
	Progress	Rolled Up Task	
	Milestone	Rolled Up Milestone	

V.T.Hung

### Procurement Plan for Ha Tinh 500 kV Substation

ID	Task Name	1998												1999												2000														
		O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
1	Prepare Bidding Document	█																																						
2	Publish S.P.N in International Papers				█																																			
3	Publish S.P.N in Local Papers				█																																			
4	Bank approve B.D				█																																			
6	Bids Issuing				█																																			
6	Bid Opening							◆ 5/2																																
7	Selection of Bids							█																																
8	Bank's Approval										█																													
9	Contract Negotiating													█																										
10	Bank's Approval																█																							
11	Signing contract																			◆ 9/7																				
12	Delivery																									█														

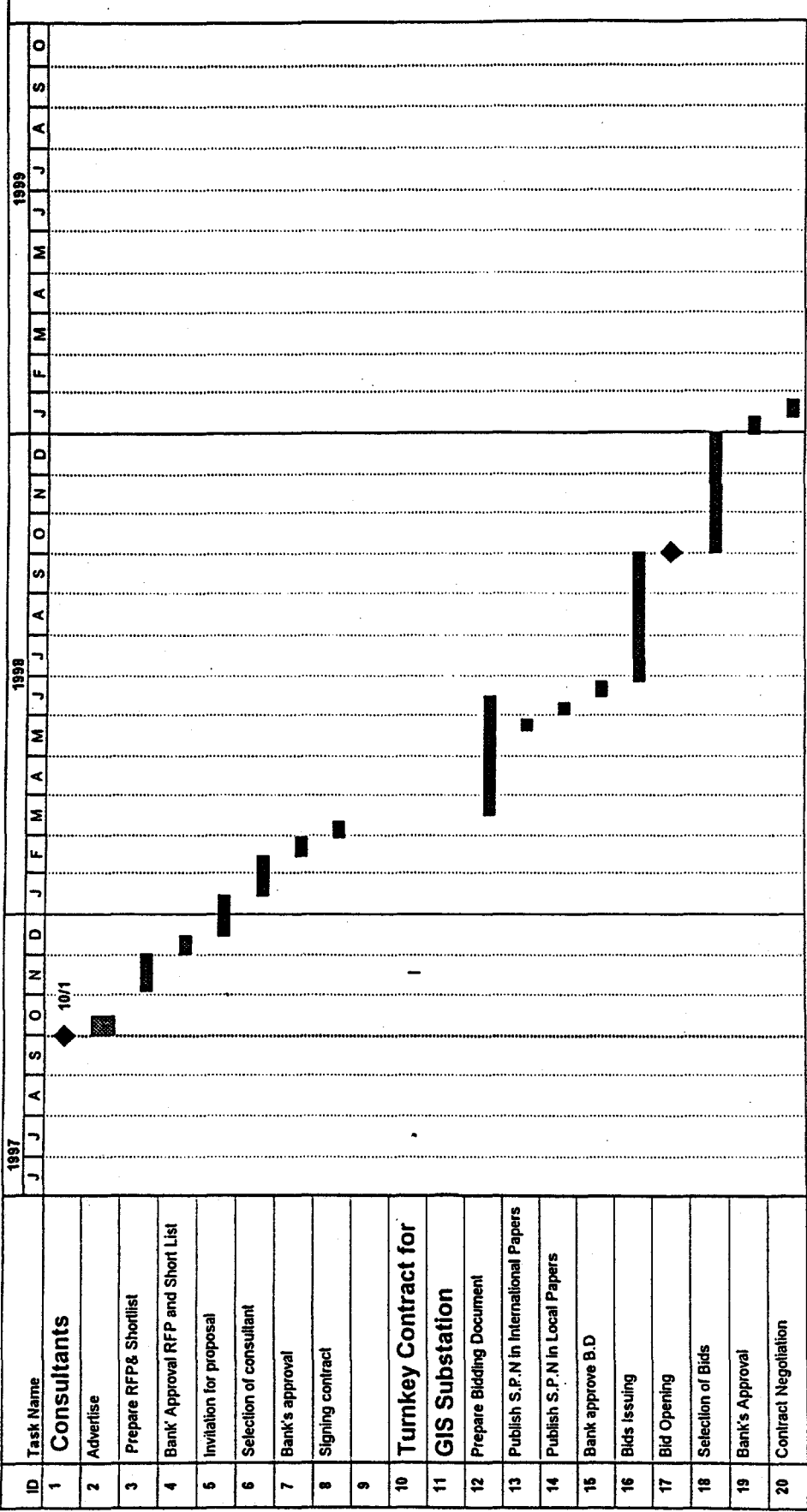
Project: TDDP  
Date: Sep 30 '97



V.T.Hung



**Procurement Plan for Nha be- Tao dan 220kV System**



Project: TDDP  
 Date: Sep 30 '97

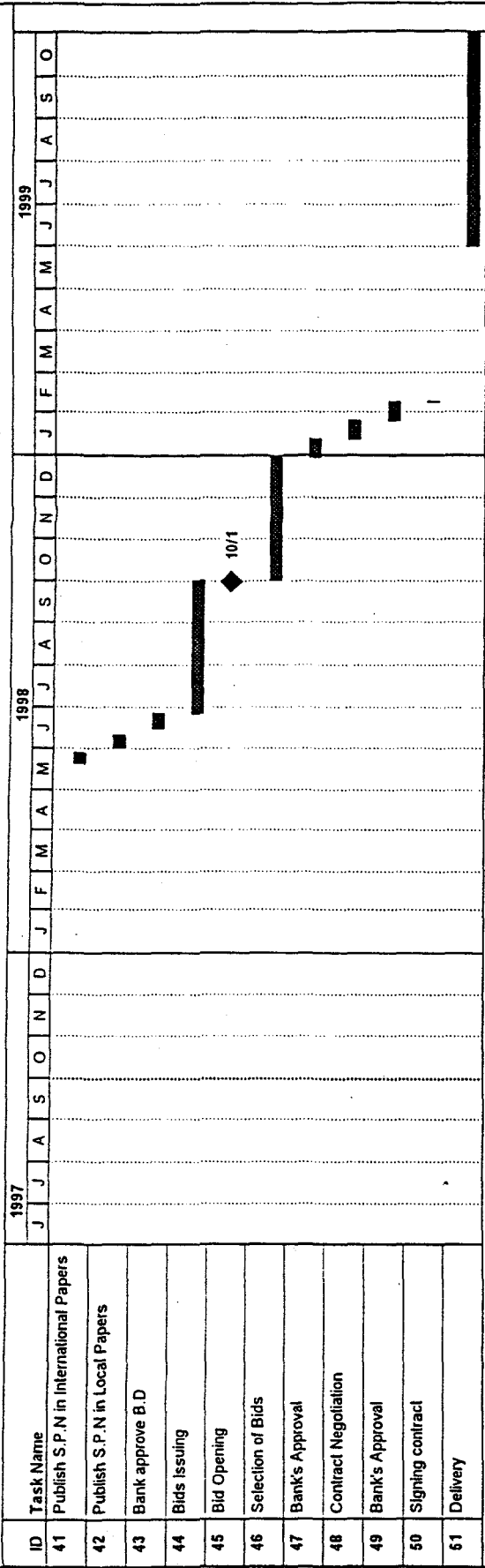
Task: Task  
 Progress: Progress  
 Milestone: Milestone

Summary: Summary  
 Rolled Up Task: Rolled Up Task  
 Rolled Up Milestone: Rolled Up Milestone

V.T.Hung



Procurement Plan for Nha be- Tao dan 220kV System



Project: TDDP  
Date: Sep 30 '97

Task: [Solid Bar] Summary: [Hatched Bar]  
 Progress: [Dotted Bar] Rolled Up Task: [Hatched Bar]  
 Milestone: [Diamond] Rolled Up Milestone: [Diamond]

Legend:  
 Task: [Solid Bar]  
 Progress: [Dotted Bar]  
 Milestone: [Diamond]

Summary: [Hatched Bar]  
 Rolled Up Task: [Hatched Bar]  
 Rolled Up Milestone: [Diamond]

Rolled Up Progress: [Solid Bar]

V.T.Hung







### Procurement Plan for Distribution Rehabilitation of Vung Tau City

ID	Task Name	1997												1998												1999											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S			
1	Finalization consultant Contract																																				
2	Preparation of bids for equipment																																				
3	Publish SPN in International Papers																																				
4	Publish SPN in Local Papers																																				
5	Approval of BD																																				
6	Invitation for bids																																				
7	Bid Opening																																				
8	Selection of bids																																				
9	Approval of Bank & Government																																				
10	Contract Negotiation																																				
11	Bank's Approval of Draft Contract																																				
12	Signing Contract																																				
13	Delivery																																				

Project: T & D Project Date: Sep 30 '97	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Task</td> <td style="width: 20%;"></td> <td style="width: 30%;">Summary</td> <td style="width: 15%;"></td> <td style="width: 20%;">Rolled Up Progress</td> <td></td> </tr> <tr> <td>Progress</td> <td></td> <td>Rolled Up Task</td> <td></td> <td colspan="2"></td> </tr> <tr> <td>Milestone</td> <td></td> <td>Rolled Up Milestone</td> <td></td> <td colspan="2"></td> </tr> </table>	Task		Summary		Rolled Up Progress		Progress		Rolled Up Task				Milestone		Rolled Up Milestone			
Task		Summary		Rolled Up Progress															
Progress		Rolled Up Task																	
Milestone		Rolled Up Milestone																	

V.T. Hung

### Implementation Plan for Demand-Side Management Program

ID	Task Name	Duration	Start	Finish	97	1998				1999				2000				2			
					Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	
1	Consultant Procurement for DSM Cell	141d	11/15/97	6/1/98																	
2	Prepare Bidding Documents & Shortlist	4w	11/15/97	12/12/97																	
3	Bank Approval of RFP Package	2.2w	12/15/97	12/29/97																	
4	Invitation for proposals	8w	2/16/98	4/10/98																	
5	Evaluation of proposals	3w	4/13/98	5/1/98																	
6	Selection/Negotiation with consultant	2w	5/4/98	5/15/98																	
7	Consultant commences work	0.2w	6/1/98	6/1/98																	
8	Consultant Support to DSM Cell	794d	6/2/98	6/15/01																	
9	Training of EVN staff	135w	6/2/98	1/1/01																	
10	Load research data collection	34.8w	10/15/98	6/15/99																	
11	Design of pilot DSM programs	34.6w	11/2/98	6/30/99																	
12	Implement of pilots	94w	3/15/99	12/31/00																	
13	Monitor and evaluate pilot programs	82.8w	8/16/99	3/15/01																	
14	Perform pilot energy audits	22w	1/15/01	6/15/01																	
15	Consultant Procurement for Standards	163d	11/15/97	7/1/98																	
16	Prepare Bidding Documents & Shortlist	4w	11/15/97	12/12/97																	
17	Bank Approval of RFP Package	2.2w	12/15/97	12/29/97																	
18	Invitation for proposals	8w	3/15/98	5/8/98																	
19	Evaluation of proposals	3w	5/11/98	5/29/98																	
20	Selection/Negotiation with consultant	2w	6/1/98	6/12/98																	
21	Consultant commences work	0.2w	7/1/98	7/1/98																	

Project: Vietnam T&D Project  
Date: 9/30/97





### Implementation Plan for Demand-Side Management Program

ID	Task Name	Duration	Start	Finish	97		1998				1999				2000				2	
					Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2
22	Consultant Assistance for Standards Work	652d	7/2/98	12/31/00																
23	Training of GOV staff	78.4w	7/2/98	12/31/99																
24	Review standards from neighboring countries	14.2w	8/15/98	11/23/98																
25	Survey existing equipment/buildings	17.6w	10/15/98	2/15/99																
26	Establish equipment testing protocol	12w	2/1/99	4/23/99																
27	Prepare draft standards and codes	43.6w	6/1/99	3/30/00																
28	Investigate compliance mechanisms	72w	8/16/99	12/31/00																
29	Finalization of standards	13w	7/1/00	9/29/00																

Project: Vietnam T&D Project  
Date: 9/30/97

Task		Summary		Rolled Up Progress	
Progress		Rolled Up Task			
Milestone	◆	Rolled Up Milestone	◇		

## Attachment 2 to Annex 6

### Procurement Monitoring Group

#### Procurement Monitoring Group (PMG)

1. A Procurement Monitoring Group (PMG) will be appointed by June 30, 1998 to exercise supervisory and monitoring control over the procurement activities related to the IDA Credit. The PMG will comprise of one representative from the Ministry of Industry (MOI), the Vice Director General of EVN (Chairman), and Directors of key departments of EVN: International Cooperation, Personnel and Organization, Project Evaluation and Administration.

#### Functions of the PMG

2. The purpose of the PMG would be to ensure that the procurement processes for this project are carried out in a timely manner according to agreed schedules.

3. The PMG will not be involved in the procurement process itself, i.e. its members will not engage or interfere in evaluation, selection, review and decision processes related to procurement. The PMG will also not be involved in implementation after the contract has been signed.

#### Working Procedures

4. The PMG will function under the Chairmanship of the Deputy Director General of EVN and will report to the Director General of EVN (DG). Its main responsibility will be to see that the procurement process is carried out according to specified schedules and report delays to the DG. Under authorization of the DG, the PMG will urge the concerned parties to expedite the procurement process. In particular, the PMG will be empowered to request necessary documents and to monitor the following activities of the procurement process:

- (a) Receive, at the commencement of the project, from the concerned implementing agencies a procurement schedule which it would use as the bench mark for monitoring the procurement activities and identifying delays;
- (b) Require each implementing agency to provide to it a monthly status report on the procurement activities that the agency is or is supposed to be currently engaged in, indicating whether the activities are progressing smoothly and on schedule or are experiencing or expected to experience delays, giving reasons thereof;
- (c) Meet once a month with the DG to review progress and prepare a very brief Status Report identifying only those items which are not progressing satisfactorily, calling for explanation from the agency where the item has been held up and agreeing on remedial measures;
- (d) Send follow-up inquiries directly to implementing agencies of concerned bodies where procurement activities have been held up;
- (e) Call for a meeting with IDA local representatives whenever required; and
- (f) Bring to the attention of the Government serious cases of procurement delays.

### **Stages in Procurement Monitoring and Setting Benchmarks**

5. The PMG will monitor the following stages in the procurement cycle. The benchmark periods for key activities, in days, would be indicated in the procurement schedule by the implementing agencies at the commencement of the procurement process. The duration of these periods will vary from project to project depending on the complexity of procurement:

- (a) Preparation of RFPs for consultant's services and bid documents for procurement of equipment (DOCS);
- (b) Approval of DOCS by EVN;
- (c) Approval of DOCS by IDA;
- (d) Dates for advertisement and selling of DOCS;
- (e) Opening and closing dates for DOCS;
- (f) Receipt of bids;
- (g) Evaluation of DOCS at implementing agency level, including evaluation by consultants;
- (h) Approval of implementing agency Award Recommendation by EVN;
- (i) No-objection to EVN Award Recommendation by IDA;
- (j) Review of Award Recommendation in case of objections raised by IDA;
- (k) Contract negotiations and finalization of contract;
- (l) Approval of contract by EVN; and
- (m) Approval of contract by external government agencies



**Annex 7**  
**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Project Processing Budget and Schedule**

A. Project Budget (US\$000)	<u>Planned</u> (At final PCD stage) 191	<u>Actual</u>  185
B. Project Schedule	<u>Planned</u> (At final PCD stage)	<u>Actual</u>
Time taken to prepare the project (months) <sup>1a</sup>	18 months	
First Bank mission (identification)	06/13/1996	06/13/1996
Appraisal mission departure	06/01/1997	09/29/1997
Negotiations	07/30/1997	11/18/1997
Planned Date of Effectiveness	01/28/1998	03 /31/ 1998
Prepared by: Electricity of Vietnam.		
Preparation assistance: Bank missions and consultants.		
Bank staff who worked on the project included: Darayes Mehta (Task Team Leader), Rebecca Sekse (Financial Analyst), Enrique Crousillat (Senior Energy Economist), Jack Fritz (Environmental Specialist), Maninder Gill (Resettlement Specialist), Clifford Garstang (Senior Counsel), Ranjit Lamech (Restructuring Specialist), Carolyn Tager and Jas Singh (DSM Specialists), and Theresa Gamulo (Task Assistant). The Task Team was supported by Anil Malhotra (Regional Energy Specialist) and Hung Van Tien (Project Officer) of the Resident Mission.		

<sup>1a</sup> The Disaster Reconstruction Component was prepared in November 1997.



**Annex 8**  
**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Documents in the Project File**

1. Project Implementation Plan.
2. Feasibility Study: 500 kV Pleiku-Phulam Transmission Line
3. Feasibility Study: 500 kV Ha Tinh Substation
4. Feasibility Study: 220 kV Nha Be Tao Dan System
5. Feasibility Study: Halong Distribution
6. Feasibility Study: Vinh Distribution
7. Feasibility Study: Vung Tau Distribution
8. Environmental Impact Analysis 500 kV Pleiku-Phulam Transmission Line
9. Resettlement Action Plan: 500 kV Pleiku-Phulam Transmission Line
10. Resettlement Action Plan: Halong Distribution
11. Resettlement Action Plan: Vinh Distribution
12. Resettlement Action Plan: Vung Tau Distribution
13. Resettlement Action Plan: Nha Be Tao Dan 220 kV System
14. Energy Sector Investment, Institutions and Policy Review (1998)
15. Terms of Reference: Regulatory framework Study
16. Terms of Reference: Transmission and Distribution Functions of EVN
17. Terms of Reference: Transmission Master Plan
18. Terms of Reference: Transmission and Distribution Functions of EVN
19. Terms of Reference: Technical Assistance for Demand-Side Management Component
20. National Tariff Study, Hagler Bailly, 1996 (ADB, TA)
21. Improvement of Financial and Accounting System, Price Waterhouse, 1996 (ADB, TA)





**Annex 9**  
**Vietnam**  
**Transmission, Distribution and Disaster Reconstruction Project**  
**Statement of Loans and Credits**  
**Status of Bank Group Operations in Vietnam**  
**IBRD Loans and IDA Credits in the Operations Portfolio**  
**(as of December 4, 1997)**

Project ID	Loan or Credit No.	Fiscal Year	Borrower	Purpose	Original Amount in US\$ Millions				Difference Between expected and actual disbursements a/		
					IBRD	IDA	Cancellations	Undisbursed	Orig	Frm	Rev'd
Number of Closed Loans/credits: 2											
<b>Active Loans</b>											
VN-PE-4839	IDA29960	1998	GOVT OF VIET NAM	FOREST PROT. & RUL DE	0.00	21.50	0.00	21.92	0.00	0.00	
VN-PE-4843	IDA30000	1998	GOVT OF VIET NAM	INLAND WATERWAYS	0.00	73.00	0.00	73.00	0.00	0.00	
VN-PE-39021	IDA29290	1997	GOV'T OF VIET NAM	RURAL TRANSPORT	0.00	55.00	0.00	48.64	1.96	0.00	
VN-PE-4830	IDAN0260	1997	GOV	WATER SUPPLY	0.00	98.61	0.00	98.28	0.00	0.00	
VN-PE-4842	IDAN0130	1997	GOVT OF VIET NAM	HIGHWAY REHAB II	0.00	195.60	0.00	187.88	-1.13	0.00	
VN-PE-36042	IDA27850	1996	SOC. REP. OF VIETNAM	BANKING SYSTEM MODER	0.00	49.00	0.00	45.35	25.14	0.00	
VN-PE-42236	IDA28200	1996	GOVT. OF VIETNAM	POWER DEV	0.00	180.00	0.00	31.30	-39.41	0.00	
VN-PE-4838	IDA28080	1996	SOCIALIST REPUBLIC OF VIE	NATIONAL HEALTH SUPP	0.00	101.20	0.00	91.46	5.07	0.00	
VN-PE-4841	IDA28070	1996	SOC REP OF VIET NAM	POPULATION & FAMILY	0.00	50.00	0.00	43.83	6.32	0.00	
VN-PE-4847	IDA28550	1996	GOV	RURAL FINANCE	0.00	122.00	0.00	108.93	21.99	0.00	
VN-PE-4834	IDA27110	1995	GOV	IRRIGATION REHABILIT	0.00	100.00	0.00	77.06	-5.10	0.00	
VN-PE-4836	IDA27240	1995	EVN PC2 PC3	POWER SECTOR REHAB &	0.00	165.00	0.00	133.53	85.40	9.28	
VN-PE-4832	IDA25490	1994	GOVT OF VIET NAM	HIGHWAY REHAB	0.00	158.50	0.00	103.50	79.90	16.89	
VN-PE-4835	IDA25480	1994	SOC REP OF VIET NAM F VIE	PRIMARY EDUCATION	0.00	70.00	0.00	50.30	17.76	0.00	
VN-PE-4837	IDA25610	1994	GOVT OF VIET NAM	AGRIC REHABILITATION	0.00	96.00	0.00	7.41	2.66	0.00	
<b>Total</b>					<b>0.00</b>	<b>1,535.41</b>	<b>0.00</b>	<b>1,122.39</b>	<b>201.56</b>	<b>26.17</b>	
					<b>Active Loans</b>	<b>Closed Loans</b>	<b>Total</b>				
Total Disbursed (IBRD and IDA):					352.29	209.99	562.28				
of which has been repaid:					0.00	5.37	5.37				
Total now held by IBRD and IDA:					1,535.41	204.32	1,739.73				
Amount sold					0.00	0.00	0.00				
Of which repaid					0.00	0.00	0.00				
Total Undisbursed					1,122.39	0.00	1,122.39				

a. Intended disbursements to date minus actual disbursements to date as projected at appraisal.  
b. Rating of 1-4: see OD 13.05. Annex D2. Preparation of Implementation Summary (Form 590). Following the FY94 Annual Review of Portfolio performance (ARPP), a letter based system will be used (HS = highly Satisfactory, S = satisfactory, U = unsatisfactory, HU = highly unsatisfactory): see proposed Improvements in Project and Portfolio Performance Rating Methodology (SecM94-901), August 23, 1994.

**Note:**

Disbursement data is updated at the end of the first week of the month.

Generated by the Operations Information System (OIS)

**Vietnam**  
**STATEMENT OF IFC's**  
**Committed and Disbursed Portfolio**  
 As of 31-Oct-97  
 (In US Dollar Millions)

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
1994	Hanoi Metropole	4.33	0.00	3.50	14.81	4.33	0.00	3.50	14.81
1995	Baria Serece Prt	3.00	0.00	0.00	1.80	3.00	0.00	0.00	1.80
1995	Foremost Dairy	8.00	0.00	0.00	6.50	8.00	0.00	0.00	6.50
1996	Kyoei Steel	15.00	0.00	0.00	0.00	15.00	0.00	0.00	0.00
1996	Morn.Star Cement	30.00	0.00	0.00	66.60	25.80	0.00	0.00	57.28
1996	Sucre de Bourbon	22.00	0.00	0.00	0.00	19.80	0.00	0.00	0.00
1996	SMH Glass Co.	10.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00
1996	Tosac Hotel	3.39	0.00	0.00	2.78	0.00	0.00	0.00	0.00
1996	Tourane Hotel	6.00	0.00	2.30	6.00	0.00	0.00	0.00	0.00
1996	VimafLOUR	8.00	0.00	0.00	3.00	8.00	0.00	0.00	3.00
1996	VILC	0.00	.75	0.00	0.00	0.00	.75	0.00	0.00
1997	SEM Hotel	13.05	0.00	0.00	28.00	0.00	0.00	0.00	0.00
Total Portfolio:		122.77	.75	5.80	133.99	83.93	.75	3.50	83.39
Approvals Pending Commitment									
		<u>Loan</u>	<u>Equity</u>	<u>Quasi</u>	<u>Partic</u>				
1997	KIA HUY HOANG	6.20	.62	.80	6.20				
1997	NGHE AN SUGAR	20.00	0.00	0.00	30.00				
1997	NGHI SON CEMENT	30.00	0.00	0.00	26.50				
1997	SEM HOTEL	0.00	0.00	4.50	0.00				
1996	VIETNAM INTL LSE	5.00	0.00	0.00	10.00				
1997	VINAFOOD	10.50	0.00	0.00	13.50				
Total Pending Commitment:		71.70	.62	5.30	86.20				

Annex 10  
Vietnam  
Transmission, Distribution and Disaster Reconstruction Project  
Country at a Glance

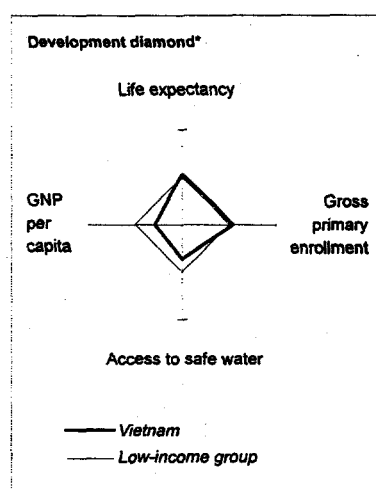
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# Vietnam at a glance

8/15/97

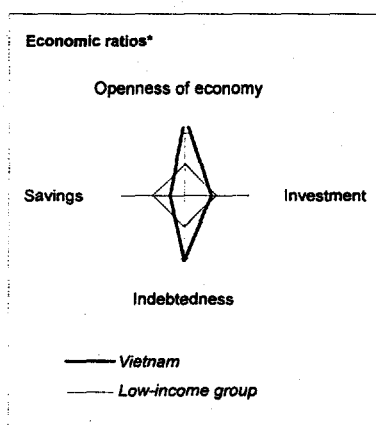
## POVERTY and SOCIAL

	Vietnam	East Asia	Low-income
Population mid-1996 (millions)	75.3	1,726	3,229
GNP per capita 1996 (US\$)	290	890	500
GNP 1996 (billions US\$)	21.9	1,542	1,601
<b>Average annual growth, 1990-96</b>			
Population (%)	2.0	1.3	1.7
Labor force (%)	1.9	1.3	1.7
<b>Most recent estimate (latest year available since 1989)</b>			
Poverty: headcount index (% of population)	51	..	..
Urban population (% of total population)	21	31	29
Life expectancy at birth (years)	68	68	63
Infant mortality (per 1,000 live births)	41	40	69
Child malnutrition (% of children under 5)	45	..	..
Access to safe water (% of population)	38	49	53
Illiteracy (% of population age 15+)	6	17	34
Gross primary enrollment (% of school-age population)	114	117	105
Male	..	120	112
Female	..	116	98



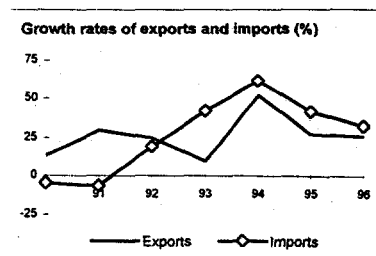
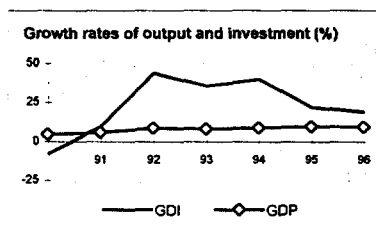
## KEY ECONOMIC RATIOS and LONG-TERM TRENDS

	1975	1985	1995	1996	
GDP (billions US\$)	..	17.0	20.2	23.3	
Gross domestic investment/GDP	..	..	27.1	27.8	
Exports of goods and services/GDP	..	..	36.0	41.0	
Gross domestic savings/GDP	..	..	16.3	14.1	
Gross national savings/GDP	..	..	16.8	16.6	
Current account balance/GDP	..	-3.1	-10.2	-11.3	
Interest payments/GDP	..	..	0.5	0.4	
Total debt/GDP	..	..	127.5	114.0	
Total debt service/exports	..	..	14.8	9.3	
Present value of debt/GDP	..	..	115.2	..	
Present value of debt/exports	..	..	316.5	..	
<b>(average annual growth)</b>					
GDP	..	6.9	9.5	9.3	8.0
GNP per capita	..	4.9	7.4	7.4	6.2
Exports of goods and services	..	25.4	27.1	25.6	14.0



## STRUCTURE of the ECONOMY

	1975	1985	1995	1996
<b>(% of GDP)</b>				
Agriculture	..	..	27.5	27.2
Industry	..	..	30.1	30.7
Manufacturing	..	..	..	..
Services	..	..	42.4	42.1
Private consumption	..	..	76.8	..
General government consumption	..	..	..	..
Imports of goods and services	..	..	46.8	54.7
<b>(average annual growth)</b>				
Agriculture	..	5.2	4.7	4.8
Industry	..	11.7	13.9	15.6
Manufacturing	..	..	..	..
Services	..	8.2	10.9	8.9
Private consumption	..	..	..	..
General government consumption	..	..	..	..
Gross domestic investment	..	26.4	21.7	18.9
Imports of goods and services	..	24.3	41.3	32.3
Gross national product	..	7.2	9.5	9.3

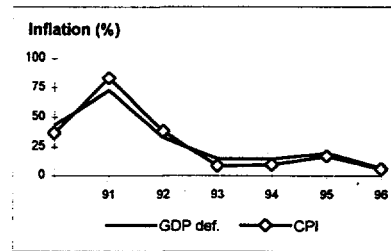


Note: 1996 data are preliminary estimates. Figures in italics are for years other than those specified.

\* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

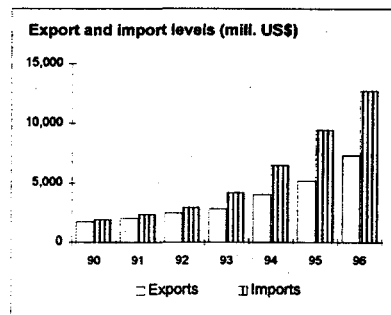
**PRICES and GOVERNMENT FINANCE**

	1975	1985	1995	1996
<b>Domestic prices</b>				
<i>(% change)</i>				
Consumer prices	..	..	16.8	5.6
Implicit GDP deflator	..	94.2	19.5	6.1
<b>Government finance</b>				
<i>(% of GDP)</i>				
Current revenue	..	..	23.9	23.6
Current budget balance	..	..	5.2	6.1
Overall surplus/deficit	..	..	-0.1	-0.1



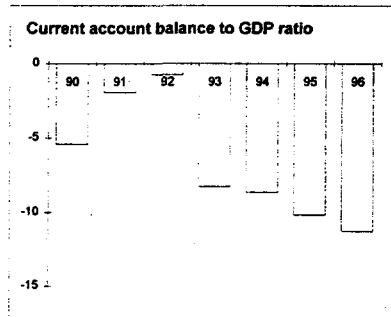
**TRADE**

	1975	1985	1995	1996
<i>(millions US\$)</i>				
Total exports (fob)	..	507	5,198	7,330
Rice	..	..	547	855
Fuel	..	..	1,063	1,346
Manufactures	..	..	..	..
Total imports (cif)	..	930	9,457	12,779
Food	..	..	..	..
Fuel and energy	..	..	..	..
Capital goods	..	..	..	..
Export price index (1987=100)	..	..	..	..
Import price index (1987=100)	..	..	..	..
Terms of trade (1987=100)	..	..	..	..



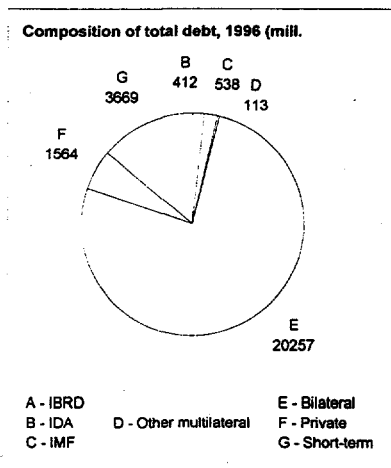
**BALANCE of PAYMENTS**

	1975	1985	1995	1996
<i>(millions US\$)</i>				
Exports of goods and services	..	..	7,272	9,573
Imports of goods and services	..	..	9,457	12,779
Resource balance	..	..	-2,185	-3,206
Net income	..	-90	-362	-487
Net current transfers	..	52	474	1,050
Current account balance, before official capital transfers	..	-534	-2,073	-2,642
Financing items (net)	..	265	1,894	2,171
Changes in net reserves	..	269	179	471
<b>Memo:</b>				
Reserves including gold (mill. US\$)	..	..	1,320	..
Conversion rate (local/US\$)	..	8.3	11,010.0	11,080.0



**EXTERNAL DEBT and RESOURCE FLOWS**

	1975	1985	1995	1996
<i>(millions US\$)</i>				
Total debt outstanding and disbursed	..	..	25,815	26,553
IBRD	..	..	0	0
IDA	..	..	231	412
Total debt service	..	..	367	309
IBRD	..	..	0	0
IDA	..	..	2	3
<b>Composition of net resource flows</b>				
Official grants	249	38	150	150
Official creditors	..	..	298	466
Private creditors	..	..	-67	..
Foreign direct investment	..	..	2,236	1,838
Portfolio equity	..	..	..	..
<b>World Bank program</b>				
Commitments	..	..	265	502
Disbursements	..	..	47	189
Principal repayments	..	..	1	1
Net flows	..	..	46	188
Interest payments	..	..	2	2
Net transfers	..	..	45	186



**Annex 11**  
**Vietnam**  
**Transmission, Distribution Disaster Reconstruction Project**  
**Status of Power Sector Reforms**

The power sector in Vietnam began its current phase of market focused reforms in 1995 by the establishment of a *State Corporation*<sup>1</sup> for electricity, named the Electricity of Vietnam (EVN). This one step implied significant shifts from the earlier institutional environment, specifically: (a) separation of power sector operations from the direct control of ministries -- formerly, the electricity sector was part of the Ministry of Energy; (b) it clearly defined the role of the Board of Management to represent the owner; (c) established a corporate form under the State Enterprise Law. From a management perspective the formation of EVN allowed scarce management skills to be leveraged by centralizing key responsibilities in finance and investment.

The on-going reforms in the power sector are proceeding at two levels. First, at the level of nationwide administrative reforms and legal reforms that influence and govern power sector operations. These include, establishing a legal framework, allowing private sector entry in sector operations and reassessing the network of government agencies who have some influence on power sector investments and senior management decisions. Second, reforms are being initiated at the sector level, specifically within EVN. These include, internal control process in areas of accounting and finance, and responsibility allocation within the management structure. A critical feature of these reforms is the need for appropriate sequencing and the need to ensure that reforms are being on suitable foundations of rules, incentives and adequately trained personnel at all levels within and outside the power sector.

The World Bank began its reform dialogue with the Government at about the same time as the establishment of EVN. Initially, the sector work helped establish a set of reform objectives and principles and transition steps to achieve the reform objectives.<sup>2</sup> This work led to the development of a reform strategy which was agreed upon with the Government under the second IDA power credit, Power System Development Project. This agreement was in the form of a policy letter from the Ministry of Industry, which is responsible for policy and oversight of the power sector.<sup>3</sup>

The principal elements of the power sector reform strategy are described below:

**Reforms of Government Administration and Legal Structure**

Owing to the centrally planned heritage from which the existing power sector has evolved, the prevailing external incentives do not allow for purely commercial operating decisions at the level of operating sector enterprises. The government has recognized that private sector involvement in the power sector will increase in the next few years and that mechanisms need to be instituted to regulate their operations in a manner consistent with the oversight of the state-owned sector. The following reforms are being pursued:

---

<sup>1</sup> A State Corporation is defined in the State Enterprise Law as an enterprise comprised of multiple State Enterprises. It may be compared to a State holding company.

<sup>2</sup> World Bank ESMAP project on Power Sector Reform and Restructuring in Vietnam (Report No. 174/95, September 1995).

<sup>3</sup> Policy Statement from the Government of Vietnam, dated August 12, 1997 (refer Annex ....)

(a) Preparation of an Electricity Law

An Electricity Law and supporting secondary regulations are being drafted and reviewed by the Government. The proposed Law will pave the way for a distinct regulatory body and licensing of individual sector operations by function (i.e. generation, transmission, bulk supply, distribution and retail supply). The latter will facilitate the planned separation of transmission as a separate profit center, and also allow for private entry into distribution franchise operations. One of the key functions of the regulatory body would be to set electricity tariffs on a basis that allows for adequate financial recovery and ability to finance future investment.

It is expected that the Electricity Law will be promulgated in 1998. This assistance is being provided by a World Bank ESMAP grant and an IDF grant for capacity building.

(b) Introducing Private Sector in the Power Sector

The Government of Vietnam has taken a number of initiatives to facilitate private investment in power, principally in terms of obtaining Cabinet level approval for implementing the Phu-My-2-2 project as a BOT-project. Under the second IDA-credit (Power System Development Project), technical assistance was provided to GOVN to prepare a solicitation procedure for inviting private investors to develop the Phu-My-2-2 project. This process is now at an advanced stage of implementation. It is expected that the Request for Proposal (RFPs) would be offered by November 1997. The evaluation of proposals should be completed by March 1998. Negotiations with the leading developers would begin soon thereafter.

The Government is looking at means of attracting private investment in distribution operations. These investments are likely to be focused in small distribution franchises to begin with. A PHRD study will examine the options and recommend a process of attracting private investment in distribution.

(c) Electricity Tariff - Regulatory Procedures and Tariff Levels

Procedures for tariff setting in Vietnam require various levels of review by government agencies to balance both economic, financial and social considerations. While rapid tariff increases have characterized the reform agenda over the last 3-years, tariffs are still not at levels deemed adequate to finance the rapid expansion of electricity demand. The Government has already committed itself to a program of increasing tariffs periodically in order to reach a financially sufficient long-run marginal cost (LRMC) tariff. Retail prices based on these principles will ensure that resources are allocated efficiently in the economy and that consumers face the appropriate price signal to utilize electricity efficiently. Economic and Sector Work (ESW) undertaken by the World Bank in cooperation with the Institute of Energy indicate that the LRMC for average retail tariffs is in the range of US \$ 7.5 to 8.0 cents/kWhr in 1996 dollars. The establishment of the regulatory body in the electricity sector will help create an institutional foundation and procedures to ensure that electricity pricing is based on sound economic and financial considerations. Secondary legislation being drafted together with the electricity law focus on these crucial aspects of tariff regulation.

## **Reforms within EVN**

(a) Decentralization of Management Decisions

The formation of EVN led to the centralization of functions and the associated reporting structures do not allow operating managers to make decisions, which results in a lack of autonomy and responsibility. To review the existing corporate organization and suggest improvements, an *Institutional Strengthening Study* was completed under the first IDA power credit (13586-VN). The specific recommendations of this study that are to be implemented include:

- Creation of Deputy-Director General for Customer Service in EVN for corporate supervision of distribution entities.
- Issuance of separate corporate charters for all distribution companies providing for increased management autonomy. This would include, increased levels of financial autonomy for approving procurement decisions.

(b) Improving Incentives for Efficiency in Distribution Operations

The distribution entities purchase bulk power from EVN (i.e. transmission and generation) at a price that does not reflect true cost of supply. Retail prices to final consumers are established by the Government and are currently uniform across the country. The difference between the retail sales price and the purchase price allows distribution companies to cover their operating expenses, but not provide any specific incentives for each distribution company to actively reduce operating costs. An ADB funded study, completed in 1996, developed a methodology for defining bulk transfer prices with improved incentives for cost reduction -- *National Tariff Study*. The Government of Vietnam has decided to phase-out the administered bulk supply tariffs and move towards a cost based bulk supply tariff. This transformation would be completed over a three-year period.

(c) Commercializing the Transmission Function

In an effort to improve resource allocation and system utilization, the power reform strategy envisages efficient pricing and contractual relationships between the transmission network business unit and the generation stations on the system. As part of this transition, cost accounting practices will first be introduced in the transmission network operations to facilitate their operation a profit center. Subsequently, efficient energy purchase contracts with generations and sales contracts with the distribution entities will be developed. A PHRD study on Improving Transmission Operations has been initiated to develop the exact implementation details. The implementation steps agreed upon under this strategy are: (i) formation of transmission operations as a cost center by end-1998; (ii) formation of transmission business unit a profit center by end-1999; and, (iii) implementation of contractual framework of electricity purchase and sales contracts by June-2000.





**Annex 12  
Vietnam**

**Transmission, Distribution and Disaster Reconstruction Project**

**Socialist Republic of Vietnam  
Power Sector Policy Statement  
August 12, 1997**

This paper sets out the main elements of the Government of Vietnam's (GOV) power sector policy. It outlines the objectives and strategy of the Government and the Ministry of Industry for the development of the power sector of Vietnam. This paper is an update of the Power Sector Policy statement issued by the Ministry of Industry on December 1st, 1995. This policy paper is supported by a Reform Implementation Plan (Attachment I).

**A. Policy Objectives**

The Government's power sector policy aims to achieve the following objectives:

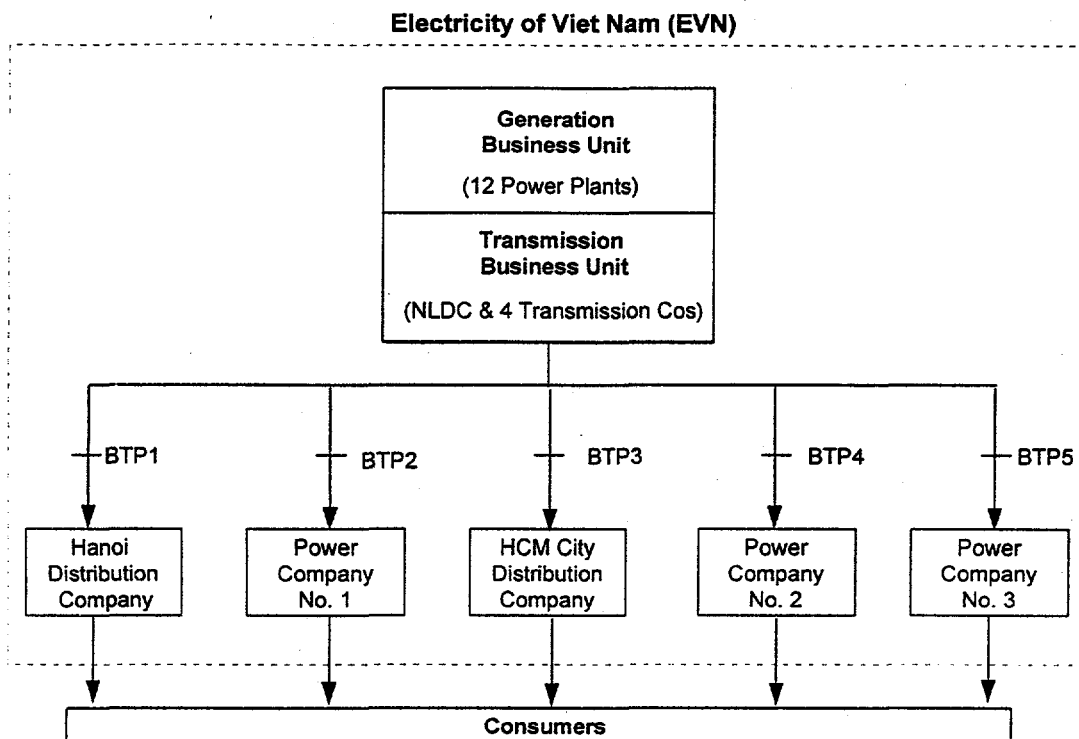
- (a) Provide electricity access to the national economy and the entire population of Vietnam.
- (b) Increase the operating/technical efficiency of the electricity sector to optimize the use of scarce investment resources.
- (c) Ensure reliable electricity supply of good quality
- (d) Resolve the mismatch between market-based production costs and State administered prices
- (e) Clearly delineate and separate State management functions and business management functions
- (f) Enable Vietnam to raise the necessary financing for power sector expansion to meet economic growth targets.

**B. An Overview of the Power Sector**

In January 1995, GOV issued Decree No. 14/CP to establish Electricity of Vietnam (EVN) as a *State Corporation* for the different power sector entities engaged in generation, transmission, distribution and associated service functions. These entities are grouped under two accounting systems: (i) independent accounting units; and, (ii) dependent accounting units. The business units fall into three categories:

- Those engaged in generation and transmission are subject to dependent accounting, and consolidation of accounts takes place at the level of EVN as a whole (general EVN). There are 17 business units involved in these activities — 13 for generation, 4 for transmission and 1 for the National Load Dispatch Center.
- Those engaged in distribution and supply are independent accounting enterprises (i.e. State Enterprises as defined in State Enterprise Law). There are five distribution units: Hanoi, HCMC, PC1, PC2, and PC3.
- Those involved in the provision of services (including finance, design and construction, and planning) have either independent or dependent accounting status.

Figure 1.



BTP : Bulk Transfer Price  
NLDC : National Load Dispatch Center

EVN has the legal status of a *state corporation* under the State Enterprise Law. Independent accounting entities have the status of *state enterprises* that are members of the state corporation (i.e. EVN). Within EVN, the Board of Management (BoM) has the highest authority and exercises functions established under the State Enterprise Law. The Ministry of Industry is responsible for policy and oversight of the power sector.

From a sector structure perspective, the core functions of generation and transmission are currently integrated and under direct management of the EVN headquarters. The generation-transmission core sells electricity in bulk to the five independent distribution companies (Figure 1). Retail prices to final consumers are established by the Government and are currently uniform across the country. The mechanism for setting the BTP allows the distribution companies to make a target profit — the profit level is determined by EVN. Given uniform retail pricing and differing distribution system costs for each distribution company, the bulk transfer price is different for each distribution company.

Vietnam is currently experiencing high growth in electricity demand. Vietnam's power development plan envisages the addition of 3,000 MW by the turn of the century and about 6,000 MW by the year 2005. To meet this ambitious expansion program, a combination of government budgetary resources, official development assistance (ODA) funds, resources from multilateral financial institutions and diversified finance will be utilized.

### C. Reform Strategy

The Government reform strategy addresses the following key aspects of power sector reform. A reform implementation plan is attached.

**(a) Structural Reform and Commercialization of Sector Enterprises**

GOV will facilitate the transformation of the power sector enterprises into efficient commercially run entities which are financially strong and creditworthy, and have management autonomy in operations. The Government strategy includes:

- Introducing cost accounting practices in the transmission network operations and facilitating the transition of the transmission business into a profit center. Subsequently, it is expected that a separate transmission company would be established as an independent legal entity (i.e. as a independent accounting member unit of EVN).
- Developing efficient pricing and contractual relationships between the transmission network business unit and the generation stations on the system. These contracts will facilitate the efficient production of electricity and optimize resource utilization on the system.
- Transforming the distribution entities which are currently independent accounting state enterprises into entities that have management and financial autonomy from the EVN State Corporation. This transition will include the development of more efficient performance incentives for the distribution entities based on market based costs. Commercial management practices will be developed in these entities to prepare for separation from the EVN State Corporation structure.

**(b) Legal and Regulatory Framework**

The GOV is preparing legislation for the power sector. It is expected that the primary Electricity Law will be supported by secondary legislation covering the aspects of tariff regulation, service regulation and licensing of activities in the power sector. This body of legislation would form a consistent legal basis to facilitate commercial sector operations and objective government oversight of the sector. The following steps are envisaged:

- promulgation of a primary Electricity Law
- development of supporting secondary legislation to the Electricity Law, to inter alia address: (a) scope and structure of regulatory agency; (b) procedures for tariff setting and regulation; (c) administrative regulations and standards.
- preparation of a Grid Code that would address issues related to interconnection and operating standards between generation entities and the transmission entity.

**(c) Electricity Pricing**

It is recognized that cost-based retail prices and internal transfer prices are essential to a commercial power sector that is expected to raise the required capital for its needs. Retail prices based on these principles will ensure that resources are allocated efficiently in the economy and that consumers face the appropriate price signal to utilize electricity efficiently. Efficient internal prices will provide incentives to the distribution companies to operate efficiently and establish an objective basis to evaluate the cost of purchasing power from BOT/JV power generation schemes. The government plans to:

- Progressively raise average retail tariff to about US\$ 7.0/kwh by 1999 and take all measures necessary to realize a self financing ratio of not less than 30% for the electricity sector as a whole.
- introduce a cost-based bulk transfer price for bulk power sales to the distribution companies.

**(d) Diversified Participation in Vietnam's Power Sector**

The objectives for promoting diversified sector participation are to: (i) mobilize additional financial resources in the form of debt and equity financing; (ii) supplement public sector investments; (iii) access the diversified sector's proven skills in project design, finance, implementation and operation; and, (iv) create an environment that fosters competition. It is expected to achieve: (i) balanced portfolio mix: power projects financed from diversified sources will be consistent with Vietnam's least-cost power plan in terms of size and technology, and with the system's operational needs; (ii) competitiveness: project sponsors will be selected through a competitive bidding process measured in terms of lowest price of electricity delivered; and, (iii) limited recourse project financing: foreign investors will secure financing on a limited recourse basis where project sponsors and lenders will assume commercial and project risks.

Diversified participation will be sought in both thermal and hydro generation schemes. A variety of financing structures may be utilized to involve diversified capital in generation. Diversified financing approaches will also be evaluated for distribution operations.

**(e) Rural Electrification**

Only 65% of the Vietnamese population has access to electricity. Access to electricity is much lower in rural than in urban areas. In order to increase rural access to electricity the Government will develop a Rural Electrification Master Plan. This master plan will define: (i) criteria for expanding the electricity network to rural areas; (ii) appropriate regulatory, institutional and financing frameworks; (iii) methodologies for forecasting and economic evaluation of alternative supply locations and options; (iv) technical standards for design, construction and operation.

**(f) Electricity Conservation**

To facilitate the efficient utilization of electricity and encourage electricity conservation practices and technologies, the Government will implement measures and systems for electricity demand-side management (DSM) and load management in Vietnam.

Signed

Ministry of Industry

Objectives	Strategy	Implementation Steps & Timetable
<p>I. Achieve financial viability and sustainability of overall power sector operations</p>	<p>1.1 Progressive increase of average retail tariff to about USc 7.0/kwh by 1999 and taking all measures necessary to ensure a self financing ratio of not less than 30% in any year.</p>	<p>1.1.1 Self Financing Ratio (SFR) targets:</p> <ul style="list-style-type: none"> <li>- 1997 SFR 30%</li> <li>- 1998 SFR 30%</li> <li>- 1999 SFR 30%</li> </ul>
	<p>1.2 Increase average retail tariff to financially sustainable levels</p>	<p>1.2.1 Average retail tariff increases:</p> <ul style="list-style-type: none"> <li>- average for 1997 6.2 USc/kwh</li> <li>- average for 1998 6.6 USc/kwh</li> <li>- average for 1999 7.0 USc/kwh</li> </ul>
	<p>1.3 Implement a <i>cost-based</i> bulk supply tariff (BST)<sup>1</sup>. This is distinct from existing internal bulk supply tariff that does not reflect actual G&amp;T costs and is based on PC's ability to pay to achieve a target profit.</p> <p>EVN will ensure that the difference between cost-reflective bulk supply tariff (BST) to PCs and retail tariff by year 2000, which results in an operating loss to PC's is compensated transparently i.e. not through the bulk supply tariff.</p>	<p>1.3.1 EVN to prepare annual audited accounts identifying full costs of generation and transmission (G&amp;T). These audited statements will be prepared beginning from January 1998 - which is the start of the new fiscal year.</p> <p>1.3.2 Implementation of full cost-based bulk supply tariff to PCs may be phased, if necessary.</p> <ul style="list-style-type: none"> <li>- 1998 70% of actual G&amp;T cost</li> <li>- 1999 85% of actual G&amp;T cost</li> <li>- 2000 100% of actual G&amp;T cost</li> </ul>

<sup>1</sup> The term bulk supply tariff (BST) refers to the price at which electricity is sold from EVN generation and transmission operations (G&T) to the distribution companies.

Objectives	Strategy	Implementation Steps & Timetable
<p>2. Commercialize, corporatize and diversify ownership of independent accounting distribution units (i.e. PCs)</p>	<p>2.1 Strengthen EVN HQ management procedures and systems to oversee PC operations efficiently.</p>	<p>2.1.1 Strengthen the HQ function of distribution management:</p> <ul style="list-style-type: none"> <li>a. Distinct function for distribution management at level of EVN Deputy Director Generals (DDG) will be defined. Evidence of this assignment of functions at DDG level will be provided by January 1998.</li> <li>c. EVN HQ to issue:               <ul style="list-style-type: none"> <li>- accounting procedures for implementing phased increase in cost-based bulk supply tariff by January 1998. (refer 1.3.2)</li> <li>- Information system standards for all PCs. (January 1999).</li> </ul> </li> </ul>
	<p>2.2 Increase management and financial autonomy of PCs.</p>	<p>2.2.1 Issue separate Charters for all PCs by mid-1998, providing increased financial and management autonomy.</p> <p>2.2.2 Annual accounting audit by independent auditors for all PCs from January 1998 onwards.</p>
	<p>2.3 Strengthen the internal organization and operations of the PCs.</p>	<p>2.3.1 Implementation of a finance and commercial organization structure within each PC as shown in attachment 1.</p> <ul style="list-style-type: none"> <li>- PC Hanoi and HCMC - January 1998</li> <li>- PC1, PC2, and PC3 - January 1999</li> </ul> <p>2.3.2 Begin work on strengthening the Meter Reading, Billing and Collection Systems<sup>2</sup> Terms of Reference - Attachment 2. <i>(Initial focus for pilot implementation could be in Vung Tau and Halong).</i></p>
	<p>2.4 Equitization of distribution operations.</p>	<p>2.4.1 Pilot equitization of one or more distribution operations based on results of PHRD study. Target date to commence equitization program: January 1999.</p>

<sup>2</sup> Reference 4.3.1, Report on Improvement of Financial and Accounting System, Draft Final Report by Price Waterhouse, March 1997.

Objectives	Strategy	Implementation Steps & Timetable
<p>3.(A) Consolidate transmission operations as a profit center and eventually as a wholly-EVN owned independent accounting unit.</p>	<p>3.1 Identification and separate accounting of transmission costs</p>	<p>3.1.1 Formation of transmission operations as a cost center, based on completion of EVN accounting audit.</p> <ul style="list-style-type: none"> <li>- Transmission cost center operating accounts prepared annually beginning in January 1998.</li> </ul>
	<p>3.2 Preparatory work for transition of transmission operations to independent accounting member unit of EVN</p>	<p>3.2.1 PIIRD-study to be completed by mid-1998. Recommendations will be reviewed with EVN and implementation will commence.</p> <p>Target dates:</p> <ul style="list-style-type: none"> <li>- Transmission formed as profit center - December 1999.</li> <li>- Transmission formed as independent accounting member unit of EVN - after 2000.</li> </ul>
<p>3.(B) Strengthen EVN transmission planning capabilities.</p>		<p>3.(B).1 EVN to develop planning capacity to optimize transmission network expansion with generation expansion plans.</p> <ul style="list-style-type: none"> <li>- EVN to identify appropriate least cost planning software that incorporates transmission network optimization together with generation expansion. (September 1997)</li> <li>- EVN to obtain the package and training for its utilization. (January 1998)</li> <li>- EVN to prepare system expansion plan with optimization of transmission and generation. (December 1998).</li> </ul>

Objectives	Strategy	Implementation Steps & Timetable
<p>4. Create a system of government regulatory oversight that allows the power sector to be financially viable and efficient, and also protects the interest of the consumer for reliable and least-cost supply.</p>	<p>4.1 Implementation of an Electricity Law that defines the functions of government in the areas of policy and regulation. Draft regulations will be prepared that define the basic regulatory framework and initial institutional mechanism to perform the regulatory functions.</p> <p><i>(The above work is partially supported by ESMAP Grant and IDJ Grant.)</i></p>	<p>4.1.1 Timetable for preparation and presentation of draft Electricity Law to the National Assembly:</p> <ul style="list-style-type: none"> <li>- Preliminary review - October 1997</li> <li>- For promulgation - March 1998</li> </ul>
	<p>4.2 Preparation of secondary regulations, staff training and institutional capacity building for the establishment of the regulatory function.</p>	<p>4.2.1 Process and timeframe:</p> <ul style="list-style-type: none"> <li>- Preparation of secondary legislation. Expected promulgation of secondary legislation within 12-18 months of approval of Electricity Law by National Assembly.</li> <li>- Preparatory work for establishing a separate unit to perform regulatory functions</li> </ul> <p>TA to be initiated around April 1998. Implementation of TA - March 1998 to mid-1999.</p>
	<p>4.3 Government to establish a separate regulatory unit to perform regulatory functions.</p>	<p>4.3.1 Target date for the formation of unit to perform regulatory functions - January 1999.</p>



**MAP**



