Document of
The World Bank Group

Report No: ICR00003194

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IDA-40000 IDA-45760 TF-54464)

ON A

CREDIT
IN THE AMOUNT OF SDR 284.9 MILLION
(US$420 MILLION EQUIVALENT)

AND A

GLOBAL ENVIRONMENT FACILITY GRANT
IN THE AMOUNT OF US$5.25 MILLION

TO THE

SOCIALIST REPUBLIC OF VIETNAM

FOR A

SECOND RURAL ENERGY PROJECT

December 31, 2014

Energy and Extractives Global Practice
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 2014)

Currency Unit = Vietnam dong
Dong 1.00 = $ 0.0000474
$ 1.00 = Dong 21,082

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AF	Additional Financing	MoNRE	Ministry of Natural Resources & Environment
BST	Bulk Supply Tariff	MPI	Ministry of Planning and Investment
CEG	Commercial and District Electricity Group	MTR	Mid-term Review
CPI	Consumer Price Index	MV	Medium Voltage
CPS	Country Partnership Strategy	MW	Megawatt
DEP	Distribution Efficiency Project	NCB	National Competitive Bidding
DP	Displaced Person	NPC	Northern Power Corporation
DoIT	Department of Industry and Trade	NPV	Net Present Value
EA	Environmental Assessment	PAD	Project Appraisal Document
EG	Environment Guideline	PC	Power Company
EIRR	Economic Internal Rate of Return	PC1	Power Company No. 1 (Northern Region)
ES/EMP	Environment Screening/Environmental Management Plan	PC2	Power Company No. 2 (Southern Region)
EMDF	Ethnic Minorities' Development Framework	PC3	Power Company No. 3 (Central Region)
EMDP	Ethnic Minorities' Development Plan	PCB	Polychlorinated Biphenyls
ERAV	Electricity Regulatory Authority of Vietnam	PDO	Project Development Objective
EVN	Vietnam Electricity	PECC	Power Engineering Consulting Company
FIRR	Financial Internal Rate of Return	PMB	Rural Electrification and Renewable Energy Project Management Board (MoIT)
FMM	Financial Management Manual	PMG	Public Monitoring Group
GEF	Global Environment Facility	PMU	Project Management Unit (in provinces)
GEO	Global Environment Objectives	PP	Project Paper
GHG	Greenhouse Gas	PPC	Provincial People's Committee
GOV	Government of Vietnam	RE	Rural Electrification
HH	Household	RE1	Rural Energy Project
IA	Implementing Agency	RE2	Second Rural Energy Project
ICB	International Competitive Bidding	ROW	Right of Way
ICR	Implementation Completion and Results Report	RP	Resettlement Plan
IDA	International Development Association	RPF	Resettlement Policy Framework
IFRS	International Financial Reporting Standards	SEDP	Socio-economic Development Plan
ISR	Implementation Status Report	SEDS	Socio-economic Development Strategy
kWh	Kilowatt-hour	SBV	State Bank of Vietnam
kV	Kilovolt	SEM	Strategy for Ethnic Minorities
LDU	Local Distribution Utility	TA	Technical Assistance
LV	Low Voltage	T&D	Transmission and Distribution
M&E	Monitoring and Evaluation	VDB	Vietnam Development Bank
MoF	Ministry of Finance	VND	Vietnamese Dong
MoIT	Ministry of Industry and Trade		

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VIETNAM
Second Rural Energy Project

CONTENTS

Data Sheet

A. Basic Information			
Country:	Vietnam	Project Name:	Second Rural Energy Project
Project ID:	P074688,P080074	L/C/TF Number(s):	IDA-40000,IDA-45760,TF-54464
ICR Date:	12/31/2014	ICR Type:	Core ICR
Lending Instrument:	SIL,SIL	Borrower:	Socialist Republic of Vietnam
Original Total Commitment:	XDR 151.10 million, USD 5.25 million Additional Financing XDR 133.8M	Disbursed Amount:	XDR 274.94 million, USD 4.74 million
Environmental Category: B		**Focal Area**: C	
Implementing Agencies: Central Power Corporation (former Power Company No. 3) Northern Power Corporation (former Power Company No. 1) Southern Power Corporation (former Power Company No. 2) Vietnam Electricity Ministry of Industry and Trade (former Ministry of Industry) Provincial People's Committees			
Cofinanciers and Other External Partners:			

B. Key Dates

Second Rural Energy Project - P074688

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	03/13/2003	Effectiveness:	10/31/2005	10/31/2005
Appraisal:	05/20/2004	Restructuring(s):		05/21/2009 12/16/2013
Approval:	11/18/2004	Mid-term Review:	02/10/2009	02/10/2009
		Closing:	12/31/2011	06/30/2014

VN-GEF-RURAL ENERGY 2 - P080074

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	03/13/2003	Effectiveness:		10/31/2005
Appraisal:	05/20/2004	Restructuring(s):		05/21/2009
Approval:	11/18/2004	Mid-term Review:	02/16/2009	03/20/2009
		Closing:	12/31/2011	06/30/2014

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes	Satisfactory
Global Environment Objective (GEO) Outcomes	Satisfactory
Risk to Development Outcome	Moderate
Risk to GEO Outcome	Moderate
Bank Performance	Satisfactory
Borrower Performance	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

Bank	Ratings	Borrower	Ratings
Quality at Entry	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance	Satisfactory	Overall Borrower Performance	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators

Second Rural Energy Project - P074688

Implementation Performance	Indicators	QAG Assessments (if any)	Rating:
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA)	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA)	None
DO rating before Closing/Inactive status	Satisfactory		

VN-GEF-RURAL ENERGY 2 - P080074

Implementation Performance	Indicators	QAG Assessments (if any)	Rating:
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA)	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA)	None
GEO rating before Closing/Inactive Status	Satisfactory		

D. Sector and Theme Codes

Second Rural Energy Project - P074688		
	Original	Actual
Sector Code (as % of total Bank financing)		
Transmission and Distribution of Electricity	100	100
Theme Code (as % of total Bank financing)		
Rural services and infrastructure	100	100

VN-GEF-RURAL ENERGY 2 - P080074		
	Original	Actual
Sector Code (as % of total Bank financing)		
Energy efficiency in Heat and Power	100	100
Theme Code (as % of total Bank financing)		
Climate change	67	67
Rural services and infrastructure	33	33

E. Bank Staff

Second Rural Energy Project - P074688		
Positions	At ICR	At Approval
Vice President:	Axel van Trotsenburg	Jemal-ud-din Kassum
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VN-GEF-RURAL ENERGY 2 - P080074		
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ICR Primary Author:	Daisuke Miura	

F. Results Framework Analysis

Project Development Objectives (from Project Appraisal Document)
The overall development objective of the project is to improve access to good quality, affordable electricity services to rural communities, in an efficient and sustainable manner to support Vietnam's efforts towards socio-economic development.

The development objective of the project would be achieved through: (a) major upgrading and/or expansion of rural power networks in about 1,200 communes; (b) conversion of current ad-hoc local electricity management systems to local distribution utilities (LDUs) as legal entities recognized under Vietnamese law, to improve management of power distribution in rural areas, improve financial sustainability, and better enable future mobilization of private funds; and (c) capacity building assistance for the LDUs, provincial authorities, participating regional power companies, and national authorities involved in the planning and regulation of rural electrification.

The project would improve access to energy to about 2 million households in Vietnam, including many living in some of the poorest communes. The project also will enable supply of large increases in electric power for expanding productive uses in rural areas, alleviating a major constraint to local economic growth.

Revised Project Development Objectives (as approved by original approving authority)
The project development objective was not revised. Due to the approval of the Additional Financing (AF) in 2009, the outcome indicators were revised to reflect the increase of the project's coverage from 1,200 to 1,500 communes. Intermediate indicators for installation of lines, transformers and household meters were also increased accordingly.

Global Environment Objectives (from Project Appraisal Document)
The Global Environment Objective (GEO) is to reduce greenhouse gas (GHG) emissions by improving and sustaining the energy efficiency of LDUs.

Revised Global Environment Objectives (as approved by original approving authority)
The GEO was not revised. Due to the approval of the Additional Financing in 2009, the target was revised from 265 to 310 thousand tons to reflect the scale-up of the project.

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Rural communities with electricity on average in project provinces and percentage of households (HHs) with access (commune/HHs)(%)			
Value (Quantitative or Qualitative)	93/60	94.5/85	95/90	99.5/98
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	Fully achieved. In fact, by project closing date, the revised target for percentage of HHs with electricity was exceeded by almost 10%.			

Indicator 2 :	Average distribution system losses in project LDUs (%)			
Value (Quantitative or Qualitative)	30	10	10	10
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	Fully achieved. Participating provinces reported in the Borrowers' ICRs that the average distribution loss in the rural low voltage (LV) system in the project areas improved to 10% from 30%, and in some communes even reduced to 7%.			
Indicator 3 :	Average cost-recovery price needed for power in project LDUs (VND/kWh)			
Value (Quantitative or Qualitative)	2,000	700	1,300	1,300
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	Fully achieved. Improved operational efficiency mainly through distribution loss reduction significantly lowered the level of average tariff needed for the daily operation of the LDUs. The target was revised due to the increase of the regulated bulk supply tariff (BST), at which the LDUs must buy electricity from the power corporations (PCs).			
Indicator 4 :	Average commercial efficiency (improvement in billing and collection rates, reduction of non-technical losses index to be calculated according to methodology to be agreed with the Project Management Board (PMB)			
Value (Quantitative or Qualitative)	0	100	100	100
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	Fully achieved. During project implementation, non-technical losses, including non-payment of bills and theft, have been found to be extremely small owing to the integrity of the newly-invested networks and the improved skills of the LDUs' managers and technicians through a series of training programs under the project, leading to improved efficiency of the LDUs and PCs in the project area.			

(b) GEO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Reduced emissions of carbon (thousand tons)			
Value (Quantitative or Qualitative)	0	259	310	365
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	Exceeded. At the end of the project, the actual results were 118% of the target value. Significant improvement of distribution losses contributed to the project surpassing the target.			

(c) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Length of LV lines installed (thousand circuit km)			
Value (Quantitative or Qualitative)	0	30	32	27.7
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	87% achieved. Due to the higher unit investment cost as a result of price escalation occurring in 2007-2008, the volume of LV lines installed was reduced. However, actual plans submitted by provinces were well implemented.			
Indicator 2 :	Capacity of transformers installed Megavolt ampere (MVA)			
Value (Quantitative or Qualitative)	0	900	1,100	700
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	64% achieved. Due to the revision of the PCs investment plan after the project approval, a greater share of the project funds was used for medium voltage (MV) lines, and a part of transformer expansion was financed by the PCs. This is reflected in the results of the MV lines, for which the targets were exceeded.			
Indicator 3 :	Number of households with meters installed in the project area (thousands of meters)			
Value (Quantitative or Qualitative)	0	2,500	2,700	1,915
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	71% achieved. Due to the higher unit investment cost as a result of price escalation occurring in 2007-2008, the number of meters installed under the project was reduced. Northern Power Corporation (NPC) and a number of LDUs funded meters from their own sources.			
Indicator 4 :	Number of communes under legal management			
Value (Quantitative or Qualitative)	0	1,200	1,500	1,974
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	Exceeded. Actual results were 132% of the project target. This substantial success is due to the deliberate choice made by the Provincial People's Committees (PPCs) and NPC to disseminate the benefits of Bank financing to as many rural communes as possible.			
Indicator 5 :	Length of MV lines installed (thousand circuit km)			
Value (Quantitative or Qualitative)	0	4	4.3	5.3
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. %	Exceeded (123% of project target). There was a revision of the investment plan by the PCs after the project approval, and the completed length of MV lines			

achievement)	exceeded the target.			
Indicator 6 :	Policy and guidelines in place for management of rural electrification by provinces			
Value (Quantitative or Qualitative)	Not in place	Fully in place	Fully in place	Fully in place
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	Fully achieved. Prime Minister's (PM) Decision No. 21/2009 on market-based electricity tariff (Decision No. 21) was introduced in 2009, stipulating the framework for the management of rural electrification in nationwide provinces. PM Decision No. 2081 (2013) set out the provincial electrification strategy up to 2020.			
Indicator 7 :	Adoption of new policies and regulations for the sustainable management of the commune electricity system by the LDU or EVN			
Value (Quantitative or Qualitative)	Not in place	Fully in place	Fully in place	Fully in place
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	Fully in place. PM Decision No. 21 was introduced to set out (i) a uniform tariff system applicable nationwide including rural areas; and (ii) sustainable LV network management applicable to LDUs and PCs.			
Indicator 8 :	Number of technicians and managers trained			
Value (Quantitative or Qualitative)	0	2,500	2,500	5,700 (2,100 long term, 3,600 short term)
Date achieved	06/30/2004	12/31/2011	06/30/2014	06/30/2014
Comments (incl. % achievement)	Exceeded (228% of target). Through long (at least 2 years) and short term (1-2 weeks) training to LDU and PC staff, the project made a significant contribution to improved operational and financial sustainability of these organizations.			

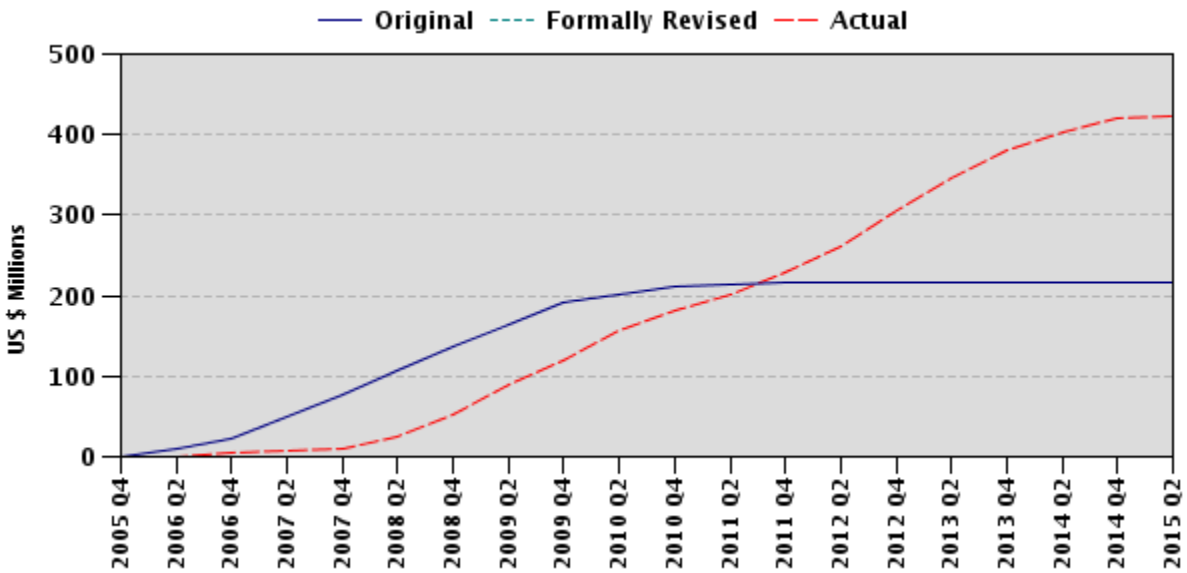
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	GEO	IP	Actual Disbursements (USD millions)	
					Project 1	Project 2
1	04/29/2005	S	S	S	0.00	0.00
2	04/26/2006	S	S	MS	5.50	0.00
3	05/21/2007	S	S	MS	9.00	0.30
4	06/13/2008	S	S	S	49.83	0.52
5	06/24/2009	S	S	S	119.35	0.56
6	06/29/2010	S	S	S	181.60	0.76
7	06/28/2011	S	S	S	229.81	1.57
8	06/19/2012	S	S	S	298.46	2.02
9	03/22/2013	S	S	S	369.24	2.22
10	10/29/2013	S	S	S	395.45	2.63
11	06/13/2014	S	S	S	419.80	3.34

H. Restructuring (if any)

Restructuring Date(s)	Board Approved		ISR Ratings at Restructuring			Amount Disbursed at Restructuring in USD millions		Reason for Restructuring & Key Changes Made
	PDO Change	GEO Change	DO	GEO	IP	Project 1	Project 2	
05/21/2009	N		S		S	114.89		An Additional Financing of $200 million equivalent was approved in 2009 to (a) address a financing gap in the original components, due to the high inflation observed in 2008, and was intended to ensure completion of the original subprojects with respect to 1,200 communes and (b) scale up the impact of the project activities to add 300 communes. Therefore, the scale of the project was expanded from the originally envisaged 1,200 to 1,500 communes.
05/21/2009		N		S	S		0.56	An Additional Financing of $200 million equivalent was approved in 2009 to (a) address a financing gap in the original components, due to the high inflation observed in 2008, and was intended to ensure completion of the original subprojects with respect to 1,200 communes; and (b) scale up the impact of the project activities to add 300 communes. Therefore, the scale of the project was expanded from the originally envisaged 1,200 to 1,500 communes.
12/16/2013	N		S		S	402.89		The level 2 restructuring allowed the PCs to participate in the LV rehabilitation and expansion subprojects (Component A), in accordance with the guidance in PM Decision No. 21.

I. Disbursement Profile (P074688)



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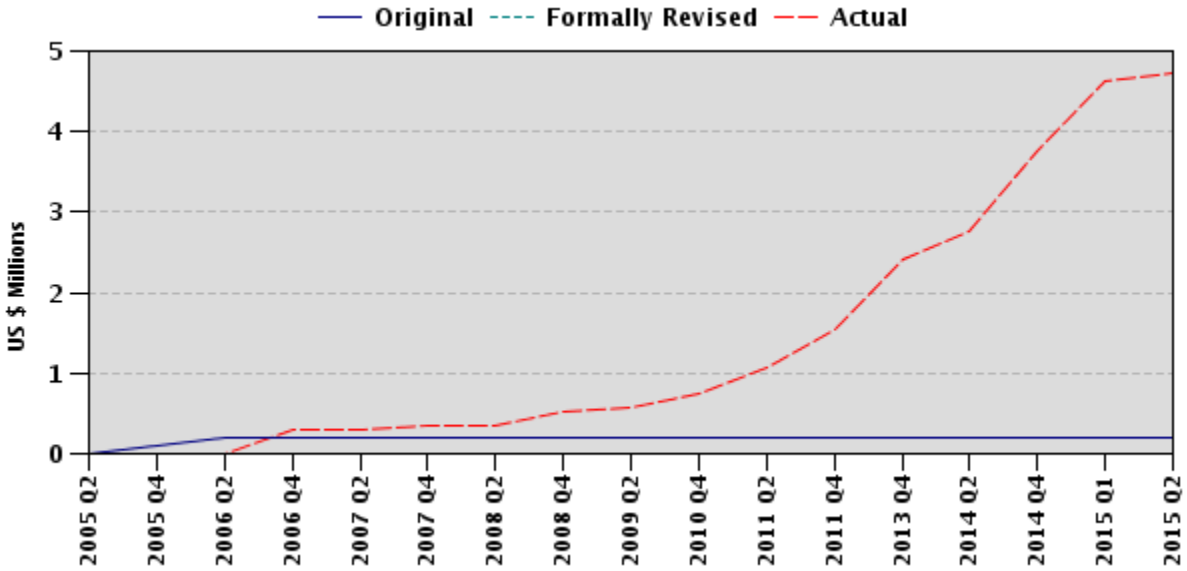


1. Project Context, Development and Global Environment Objectives Design

1.1 Context at Appraisal

Country and Sector Background

1. At the time of project preparation, there was a strong need for improved electricity access and service in Vietnam, especially for poor and rural customers. In spite of rapid increase in access to electricity from around 51 percent in 1996 to over 80 percent at the household level in 2003, there were still around 16 million people, representing about 3.5 million households, without electricity. Moreover, the rural population with access to electricity suffered from low quality of service, including low voltage and poor reliability. This was mainly caused by the traditional electrification approach where Vietnam Electricity (the EVN), the incumbent state-owned utility, provided medium voltage (MV) connections to the center of the communes but the local community, households and provincial governments had to take the responsibility for mobilizing funds, purchasing and installing equipment for the low voltage (LV) grid and for its operation and management. Most local grids were poorly designed and constructed, leading to substantial technical losses varying from 20 to 50 percent. Since the local grid purchased power at a fixed price, the cost of these losses had to be recovered from the consumers, leading to high power prices ranging from VND 1,000 to VND 2,000 per kWh or almost two to three times the nationally prescribed residential tariffs. There were often insufficient funds for rehabilitation, and in some cases, even for routine operations and management (O&M). Therefore, there was a strong demand to ensure better distribution of the benefits of electricity supply to all segments of the population, by improving service in rural areas, both to improve living standards directly, and to support development of local industrial, agricultural, and commercial activities for economic growth and development.

2. Government Decree No. 45 issued in 2001 outlined the government's rural electrification strategy at the time of approval, including provisions that: (a) licenses must be obtained by all entities engaged in design or operation of electricity generation, transmission, distribution, or any other related business; (b) diversification in investment and management of rural electrification facilities would be encouraged; (c) certain projects in rural areas could obtain favorable loans from the government; (d) the Prime Minister (PM) would set national ceiling prices, but the chairmen of the Provincial People's Committees (PPCs) would regulate specific regional prices; and (e) a framework would be followed for new investment in rural distribution. According to this new framework, EVN would invest in and manage MV lines and LV transformers; the provinces would invest in and manage LV lines; users would have to pay for their connections; and the government would provide financial support for LV lines and connections in various parts of the country.

3. The principal requirement for the above policy was the need to provide financial, regulatory and institutional conditions that encouraged the distribution utilities to renew and extend the networks and maintain them in good condition in a financially sustainable manner. To do this, the government decided that EVN and its subsidiaries would be responsible for financing and implementing investments in the MV network, while the

provinces would be in charge of the LV network. Local participation in the LV system was critical since the existing grids had been built with their financial contributions. Similarly, provincial governments had played a key role in supporting these investments and were expected to continue to do so in the future.

4. Upon completion of construction of the LV networks, it was expected that they would be managed locally and existing informal rural distribution units would be converted to legally constituted local distribution utilities (LDUs). All LDUs needed to (a) be established as legal entities; (b) have technically sound investment and operational business plans, and (c) have sufficient financial viability and sustainability. The PPC was required to transfer the ownership of the assets to the LDUs after completion of construction.

Rationale for Bank Assistance

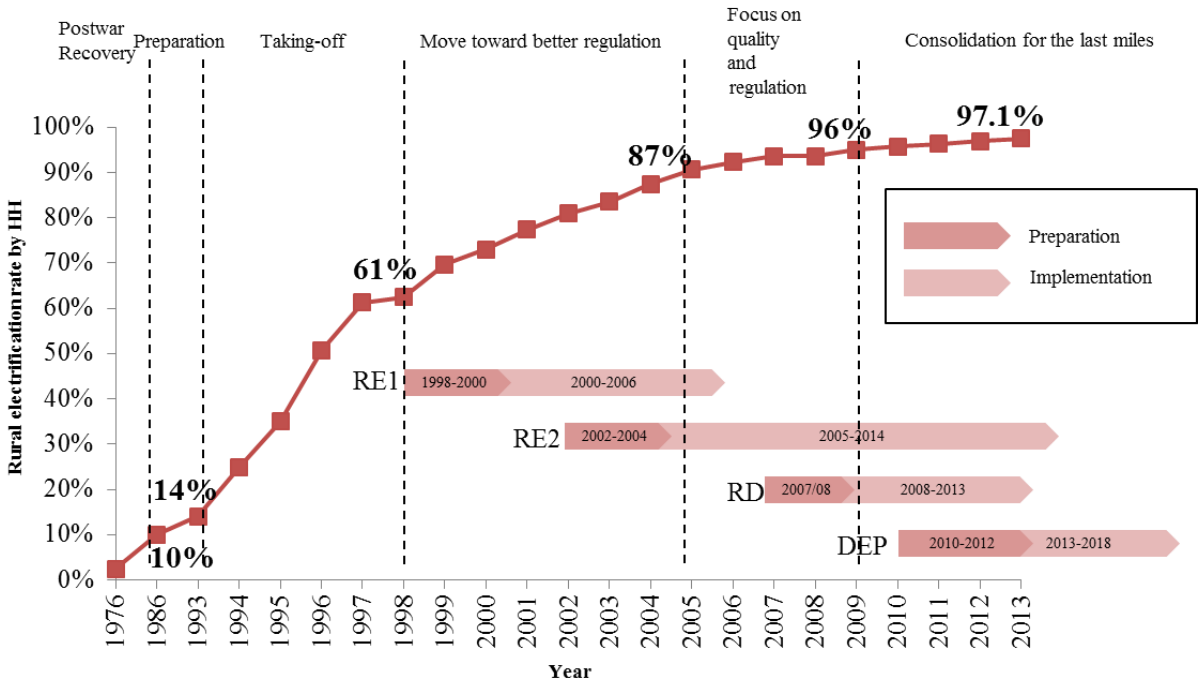
5. The Second Rural Energy (RE2) project was well-aligned with the Bank's Country Assistance Strategy (CAS) for Vietnam, covering the period from 2003 to 2006. The project supported one of the three broad CAS thematic objectives, namely 'equitable, socially inclusive, and sustainable development'. The project aimed to contribute to that objective by narrowing the development gap of disadvantaged and lagging areas in terms of electricity access.

6. The project fit well with the World Bank strategy in energy. At the time of appraisal, the Bank focused on four themes: (a) improving energy access to rural areas; (b) helping the country mobilize finance for meeting the rapidly growing demand; (c) improving the technical, commercial and financial efficiency of the energy system; and (d) initiating a reform of the sector including market restructuring, sector, and corporate governance. The project was consistent with the Bank strategy and was closely aligned with the government's long term objective of universal access.

7. The RE2 project was a major part of Vietnam's rural electrification program, for which the Bank had been an important strategic partner since the late 1990s, starting with the first Rural Energy (RE1) project (Credit 3358-VN, closed in FY2007). Vietnam's rural electrification effort has achieved remarkable results in providing electricity to more than 90 million people over a period of 30 years, from only 1.2 million people with access in 1976 (2.5 percent of households) to 92 million in 2013 (97.1 percent of households). The program and its priorities have evolved over time from providing simple electricity connections to developing and implementing strategic plans to meet rapidly growing demands for energy and improving the quality of supply.

8. As the government's program evolved, so did the Bank's support, as illustrated in Figure 1. The RE2 project was the second in a planned series of four. The RE1 project focused on increasing the number of basic connections. The RE2 project focused on rehabilitation of the existing LV systems and the institutional development to ensure service delivery at the retail level. The Rural Distribution Project (Credit 4000-VN, closed in FY2013) focused on the improvement of the MV systems and supported corporate development of the power distribution companies. The Distribution Efficiency Project (DEP, Credit 5156-VN, ongoing) supports Vietnam's Power Companies (PCs) in providing quality and reliable electricity services and in reducing greenhouse gas (GHG) emissions through demand side response and efficiency gains.

Figure 1: Rural electrification rate, policy direction, and the Bank interventions



Source: World Bank based on EVN's data

9. The RE2 project mainly supported the fifth and sixth phases of Vietnam's electrification program: 'focus on quality and regulation (Phase 5)' and 'consolidation for the last mile (Phase 6)'. In particular, it focused on the government's priorities in Phase 5 including (a) a shift from network expansion to rehabilitation; and (b) direct government support to extend electricity access, particularly to minorities and those in remote areas.

10. Inclusion of Global Environment Facility (GEF) financing was expected to deepen the efforts to ensure that the institutional and regulatory reforms take root and replicate best practice to other LDUs that were not included in the early phases of the project. GEF financing was expected to permit the development of an enhanced technical assistance (TA) program which enables the regulatory reform to be broadened and deepened, reinforcing the incentives for the LDUs to operate in a technically, commercially, and financially efficient way.

1.2 Original PDO and Key Indicators (as approved)

11. The overall development objective of the project was to improve access to good quality, affordable electricity services to rural communities, in an efficient and sustainable manner to support Vietnam's efforts toward socio-economic development.

12. The PDO was to be achieved through: (a) major upgrade and/or expansion of rural power networks in about 1,200 communes; (b) conversion of *ad hoc* local electricity management systems to LDUs as legal entities recognized under Vietnamese law, to improve management of power distribution in rural areas, improve financial sustainability and better enable future mobilization of private funds; and (c) capacity building assistance for the LDUs, provincial authorities, participating regional power

companies, and national authorities involved in the planning and regulation of rural electrification.

13. The four **key performance indicators** at the PDO level were:

a. Rural communities with electricity on average in project provinces and percentage of households with access;
b. Average distribution system losses in project LDUs (%);
c. Average cost-recovery price needed for power in project LDUs (VND/kWh); and
d. Average commercial efficiency (improvement in billing and collection rates, reduction of non-technical losses calculated in accordance with an index to be agreed upon).

14. The eight **key output indicators** at the intermediate outcome level were:

a. Length of LV lines installed (thousand circuit km);
b. Capacity of transformers installed (MVA);
c. Number of households with meters installed in the project area (thousands of meters);
d. Number of communes under legal management (either LDU or EVN);
e. Length of MV lines installed (thousand circuit km)
f. Policy and guidelines in place for management of rural electrification by provinces;
g. Adoption of new policies and regulations for the sustainable management of commune electricity system by the LDU or EVN; and
h. Number of technicians and managers trained.

1.3 Original GEO and Key Indicators (as approved)

15. The GEO was to reduce GHG emissions by improving and sustaining the energy efficiency of the LDUs.

16. The performance indicator at the GEO level was reduced emissions of carbon (tons) derived from reduced average losses and agreed methodology calculated by the Project Management Board (PMB).

1.4 Revised PDO (as approved by original approving authority) and Key Indicators, and Reasons/Justification

17. The PDO was not revised. Following the approval of the Additional Financing (AF) in 2009, the project outcome indicators were revised to reflect the increase of the project's coverage from 1,200 to 1,500 communes. Intermediate indicators for installation of lines, transformers and household meters were also increased accordingly. Table 1 shows the list of the revised outcome indicators.

Table 1: Revised Outcome Indicators

	Original Target Values	Revised Target Values
PDO Indicators		
Rural communities with electricity on average in project provinces (%HH with access)	85	90
Average cost-recovery price needed for power in project LDUs (VND/kWh)	700	1,300
Intermediate Indicators		
Length of LV lines installed (thousand circuit km)	30	32
Capacity of transformers installed (MVA)	900	1,100
Number of households with meters installed in the project area (thousands of meter)	2,500	2,700
Number of communes under legal management	1,200	1,500
Length of MV lines installed (thousand circuit km)	4	4.3

1.5 Revised GEO (as approved by original approving authority) and Key Indicators, and reasons/justification

18. The GEO was not revised. Following the approval of AF in 2009, the outcome indicator was revised from 259 to 310 thousand tons to reflect the scale-up of the project.

1.6 Main Beneficiaries

19. The primary beneficiaries targeted by the project were the rural population in the project areas. Rehabilitation and reinforcement of existing sub-transmission and distribution systems would reduce losses, improve safety and reliability and enhance the quality of service. The reduction of losses was expected to lower electricity prices paid by poor households in rural areas. Improvement of reliability and quality of the power supplied would allow the rural consumers to expand productive uses of energy. Investment in the expansion of distribution networks in rural areas would increase access to electricity on a least cost basis to poor communes with demonstrated potential for growth. The project was expected to secure efficient and reliable power supply for about 2 million households, representing more than 50 percent of those without electricity at the time of appraisal. It was estimated that about 10 million people benefit from the project.

1.7 Original Components (as approved)

20. The project provided funding for the EVN and the affiliated PCs for upgrading and rehabilitating MV systems, to the provinces for upgrading and installing LV systems, and for the conversion of existing commercial and district electricity groups (CEGs) into LDUs. The project also funded a TA to improve the regulation and management of the LDUs. The project's five main components at the time of approval and the corresponding financing amounts are listed below.

21. **Component A: Major upgrading and/or expansion of LV system in the rural power network in 1,200 communes (Total cost $242.8 million, of which the Bank funded $162.8 million).** This component was implemented by 30 provinces, with technical support and assistance from EVN subsidiaries.

22. **Component B: Major upgrading and/or expansion of MV system in the Northern Region (Total cost $42.2 million, of which the Bank funded $33 million).** This component was expected to rehabilitate MV systems in the project communes where LV systems were rehabilitated and/or expanded under Component 1. The component was implemented by Power Company No.1 (PC1).

23. **Component C: Major upgrading and/or expansion of MV system in the Southern Region (Total cost $11.2 million, of which the Bank funded $8.5 million).** This component was expected to rehabilitate MV systems in the project communes supported under Component 1. The component was implemented by Power Company No.2 (PC2).

24. **Component D: Major upgrading and/or expansion of MV system in the Central Region (Total cost $18 million, of which the Bank funded $14.2 million).** This component was expected to rehabilitate MV systems in the same project communes supported under Component 1. The component was implemented by Power Company No.3 (PC3).

25. **Component E: Technical assistance (Total cost $7 million, of which the Bank funded $1.5 million and GEF $5.25 million).** This component supported: (a) the development and implementation of a framework for regulation of companies and cooperatives and building the capacity of national and provincial authorities in planning and regulation of rural electrification; (b) transformation of LDUs into legal entities; (c) strengthening the abilities of the LDUs in commercial, technical and financial management of electricity distribution companies; and (d) replication of the best practices developed in other LDUs participating in the later phases of the project.

1.8 Revised Components

26. The five components remained the same, but there were several changes to their coverage, including the scaling up of the project and change in participating provinces. These are detailed in section 1.9.

1.9 Other significant changes

27. Although the overall design of the project remained unchanged during implementation, there were significant changes to: (a) the scale of the project; (b) the schedule of implementation; and (c) the funding allocations across the components.

28. An AF of $200 million equivalent was approved in July 2009 to: (a) address financing gaps in the original components, due to the high inflation observed in 2008, and ensure completion of the original subprojects for 1,200 communes; and (b) scale up the project activities to an additional 300 communes. Therefore, the scale of the project was expanded from the originally envisaged 1,200 to 1,500 communes.

29. The number of participating provinces was reduced to 25 from the originally identified 30 in the Project Appraisal Document (PAD). Six provinces asked, or were asked by the government, to withdraw from the project mainly due to their inability to comply with the project conditions, such as counterpart funding, transfer of LV network management to LDUs, or completion of project preparation in time. On the other hand, one province joined the project during implementation.

30. At the time of AF approval, the project closing date was also extended from December 2011 to June 2014 to allow for the additional time needed for procurement and implementation of the subprojects that were financed under the AF.

31. In December 2013, a project restructuring was carried out, allowing the Northern Power Corporation (NPC)[1] to use the credit proceeds to rehabilitate and expand not only the MV but also the LV networks and increasing the Designated Account (DA) ceiling for the NPC to enable faster disbursement for the last period of the project. The restructuring was necessary because the NPC took over the LV networks from some LDUs, in line with the requirements of the PM Decision No. 21.

2. Key Factors affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

32. The project design was well-aligned with the GoV's rural electrification policy at the time of approval. At that time, the quality and reliability of electricity supply was emerging as an important issue. Therefore, the focus of the GoV's program was on quality and regulation. Accordingly, along with network expansion, the program's focus shifted to rehabilitation, and ensuring and addressing institutional shortcomings.

33. The project design was technically robust, and the flexibility built into the design was critical to successful achievement of PDO. To enable support for numerous subprojects, with different implementation speeds, it was decided at the time of appraisal that the project would be implemented in four phases. In phase 1, project packages for the first 6 provinces, covering 355 communes, were appraised. In subsequent phases, subprojects were added to the project scope, subject to their meeting established criteria for economic, financial, technical, and social and environmental safeguards performance. This approach allowed the efficient use of funding, and allocation of available financing between subprojects that needed funds. As a result of this flexibility built in to the design, as conditions evolved and as the eligibility of provinces changed, six out of the 30 provinces identified in the PAD withdrew from the Project, while a newly eligible one joined. There were total 25 provinces participating in the Project.

34. The project design took into account the lessons of earlier operations. First, the flexibility of the project implementation was introduced in the light of lessons from two earlier operations: (a) the Power Development Project (Credit 2820, closed in 1999); and (b) Power Sector Rehabilitation and Expansion Project (Credit 2724, closed in 2000). At the design stage, flexibility was recognized as key to help cope with delays caused by approval procedures, foreign exchange fluctuation, financial difficulties of suppliers and contractors, and insufficient on-time information and guidelines from line ministries and relevant agencies. Second, the previous operation, the RE1 project, drew important lessons, including (a) institutional changes needed to be designed and planned carefully

[1] As part of the GOV's reform program targeting to strengthen the distribution companies, 11 PCs were legally re-established as 5 PCs in 2010. PC1 was merged with Hai Phong PC, Hai Duong PC, and Ninh Binh PC to form Northern Power Corporation (NPC); PC2 was merged with Dong Nai PC to form Southern Power Corporation (SPC) and PC3 was merged with Da Nang PC and Khanh Hoa Joint Stock Company to form Central Power Corporation (CPC).

with the full participation of local authorities to ensure effective implementation; (b) importance of community participation had to be fully recognized; and (c) the pre-planning of procurement activities (for example, preparation of a common set of bidding specifications, phased delivery of equipment and material, independent oversight of construction activities) was essential.

35. The risks associated with the project were adequately identified at the PAD stage, most of which were associated with the large number of actors involved in LDU rehabilitation, and the large number of LDUs to be rehabilitated. The substantial risks identified were that (a) PPCs would be unable to create and oversee LDUs effectively and (a) Ministry of Industry and Trade (MOIT)/PPCs and LDUs would not be capable of managing the program and introducing the necessary policy and institutional changes in a timely fashion. The capacity building activities implemented under the project's Technical Assistance Component largely helped mitigate these risks.

36. Selection of PDO and key performance indicators was appropriate. However, several intermediate indicators could have been better quantified by using the latest unit cost information for new connections. See section 2.3 for details.

37. Overall, the social and environmental safeguard issues were addressed adequately in the project design to minimize social and environmental impacts and ensure compliance with the relevant World Bank safeguard policies.

2.2 Implementation

38. Several factors had a negative impact on project implementation, as summarized below. However, none of them had significant impact on the achievement of PDO.

39. **Delayed start to project implementation due to new government decree.** The project was approved in November 2004, but the implementation was delayed by one year compared with the original schedule. The primary reason for the delay was the issuance of the government's Decree No. 16[2] dated February 2005, which required that all cost estimates and detailed designs for all project activities in any province had to be completed and approved at the outset, before any investment could be made. The requirements forced IAs to abandon rolling implementation in each province, as envisaged in the original design. To resolve this, the IAs prepared all the technical designs for all the communes in many provinces upfront and at the same time. After a one-year delay, the ground breaking for construction works for the first subproject took place at the beginning of 2006.

40. **Delays due to coordination challenges.** Part of the delay in the early project implementation was also caused by coordination difficulties among parties (for example, different approval and implementation procedures of PPCs and PCs). This was an expected challenge, especially at the beginning, as the first phase provinces moved to implementation, but it called for renewed efforts to address coordination problems. To streamline implementation and achieve better synchronization of MV and LV

[2] Project effectiveness was also delayed to October 2005, in order to avoid commitment fees as procurement work was delayed due to the requirements of Decree No. 16.

construction works, the following actions were carried out, which helped implementation to gradually catch up with the original schedule:

- Design of a template for use by all relevant parties to closely monitor project implementation, required to be sent as part of monthly progress reports to the Bank, MoIT and EVN.
- As the main project coordinator and implementing agency for the GEF TA, the MoIT, assigned additional staff to closely monitor and follow up on day-to-day implementation of the provinces.
- The PCs established mechanisms to assist project provinces through agreement of cooperation, and provided on-the-job training on procurement and disbursement for the provincial Project Management Unit (PMU) staff.

41. As implementation continued, it was recognized that even though the implementation and completion of MV and LV systems at the same time is not essential, a single coordinated design is necessary. The coordination of design of MV and LV systems required considerable time, leading to slower implementation. This issue was gradually resolved as the Project went on as the result of frequent discussion between PPCs and PCs and because of the advice from the Bank team.

42. **Challenges in securing counterpart funds in some provinces.** The project required counterpart funding for each participating province. The counterpart funds for one fourth of the total provinces were not promptly and sufficiently provided, leading to slower implementation in those provinces. To resolve this, the provinces with insufficient budget were dropped from the Project, and the funds were reallocated to different participating provinces with additional demand for the Bank support and with sufficient counterpart funds.

43. Key success factors in implementing and achieving project outcomes are summarized below.

44. **Good project management and close engagement by communes in project implementation.** The subprojects completed throughout project implementation were consistently of good quality. Supply reliability and safety of systems rehabilitated under the project were significantly improved. With the rehabilitation of the LV systems, including meters, average losses have reduced to 10 percent from 30 percent, and reduced to 7 percent in about 20 percent of total communes. Behind this success were good project management and community management.

- ✓ **Satisfactory project management performance by implementing agencies (IAs).** The project involved a large number of PMUs: 29 PMUs throughout the country, including 25 PMUs in 25 participating provinces; three PMUs in three PCs; and one PMB at the MOIT in charge of overall coordination of the project and implementation of the TA Component. Several problems occurred during the early stages of project implementation[3]. As the project moved ahead, all IAs

[3] These include that (a) RE2 was the first IDA-funded project for most provinces, therefore internal procedures were not in place and/or took time to develop; (b) coordination between relevant provincial

gained experiences with project implementation. Each PPC established a steering committee, composed of key personnel from related departments, such as financial planning, resources, and environment, to supervise and guide the implementation of subprojects.

- ✓ **Proactive participation and ownership by communes.** In each project commune, a Public Monitoring Group (PMG) was established to support implementation and regularly supervise the quality of construction work. The communities are cognizant that the LV networks are their own assets, and that the quality of the completed assets will affect their daily life directly.

45. **Change in regulatory environment helped the sustainability of LDUs.** The original design assumed that the LDUs as legal entities would be responsible for the operation and maintenance of the LV networks after project completion. PM Decision No. 21 issued in 2009 introduced a national uniform tariff, in which the tariffs in rural areas are the same as those in urban areas. The new tariff also brought a new feature, 'lifeline block' in which the first 50 kWh of consumption is subsidized and pegged at about 30-40 percent of costs. Overall, this tariff revision resulted in the reduction of the margins left for the LDUs. This was expected to cause financial difficulties for the smaller LDUs particularly for those in less developed and mountain areas. To mitigate this, PM Decision No. 21 allowed the PCs to take over the ownership and management of LDU assets. As a result, the LDUs that were not financially sustainable or had insufficient management and operational capability transferred their LV networks to the PCs with stronger technical and financial capability. Accordingly, most of the LDU assets that were constructed under the RE2 project were transferred to the PCs.

46. **Flexibility in project design.** The flexibility mechanism, which means that the project did not have a full design at the beginning of the project, worked well to promote efficient use of funds in response to the changing needs of subprojects and changing readiness of participating provinces.

47. There was one factor, which was out of the IA's control, but influenced the implementation as recorded here.

48. **Delay in implementation due to impact of 2007/2008 inflation.** Sharp inflation delayed project implementation for about 3-6 months because a large number of contractors either refused to sign contracts, or failed to perform as specified in the signed contracts. In fact the unit investment cost increased from $578 per household in 2005 for RE1 project to $1,062 per household in 2009 for RE2 project[4]. In this context, it was found that the original financing was adequate for only 968 of the originally identified 1,200 communes, which would have led to a reduced scale for the project. To resolve the situation, first, an estimated $99 million out of total $200 million was provided under the

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departments was not smooth at the outset; (c) provincial PMUs had much to learn, therefore effectiveness was limited; and (d) approval process in some provinces was slow.

[4] In 2007-2008, there was a significant increase in prices of some key foreign inputs such as aluminum, copper and steel and domestic inputs such as cement and labor (Vietnam inflation rate between 2007 and 2011: 2007 - 12.63%; 2008 - 19.89%; 2009 - 6.52%; 2010 - 11.75%; and 2011 - 18.13%). Source: General Statistics Office.

AF, to cover 232 communes shortfall due to inflation and the remaining $101 million was to expand the scale of the project to reach additional 300 communes. Second, several procurement solutions were introduced. These included: (a) rebidding of about 200 contracts which otherwise could not ensure re-start of construction work; and (b) price adjustment through a mechanism introduced for the contracts in late 2008[5] or through an agreement to compensation for incidents of default by employers.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

49. **M&E design.** The PDO indicators were chosen to measure readily quantifiable technical and financial outcomes: electrification rate in the project provinces, average distribution losses in project LDUs, average cost-recovery rate for power supply in project LDUs, and average commercial efficiency (with an index to be agreed upon). The intermediate indicators were straightforward and directly connected with the physical project outcomes as listed in section 1.2.

50. There are two areas for better M&E design. First, 'good quality', which is part of the PDO statement, should have been defined and included in the performance indicators.

51. Second, some intermediate indicators could have been better quantified. The target values of the length of LV line (32,000 km) and number of households with meters installed (2,700,000) were overestimated because old information on unit investment costs was used in their calculation. The actual cost could have been assessed better when setting out the revised target in the AF in 2009, rather than relying on the cost information for the RE1 project. In fact, the unit investment cost increased from $578 per HH in 2005 that was drawn from the actual cost in RE1 to $1,062 per HH in 2009 that was calculated from the disbursement information in RE2 because of the inflation and the consequent price escalation for materials and labors.

52. **M&E implementation.** The collection of M&E indicators was conducted effectively. The Bank team worked with counterparts to introduce a template for use of all the IAs to monitor implementation activities. Provincial PMUs and PCs provided quarterly reports, which were collated by the MOIT PMB and reported to the Bank.

53. **M&E utilization.** Because the indicators were designed to capture the physical progress in a straightforward manner, and collected regularly, they were effectively used to evaluate the timeliness of the project implementation, decide actions to remedy the implementation delay, and help timely decision making for the AF.

2.4 Safeguard and Fiduciary Compliance

54. **Social safeguards.** The project triggered OP 4.12 Involuntary Resettlement and OD 4.20 - Indigenous People (replaced by OP 4.10 - Indigenous Peoples in 2005). All safeguard documents were prepared, reviewed, cleared and publicly disclosed according to the requirements of the Bank's safeguard policies. The negative impacts of project activities are generally minor because most of the lines were rehabilitated from the existing ones. A small volume of land acquisition was required for the new alignments

[5] The mechanism allowed adjustment of contract price with fluctuations of Consumer Price Index (CPI) at the time of billing. With this, contractors avoided the impact of inflation after late 2008.

and substations. The IAs managed land acquisition and compensation activities in line with the construction schedule. However, given the difference in the impact magnitude and the level of commitment, land acquisition and resettlement activities required under investments implemented by Provincial PMUs (usually led by a vice-chairperson of the PPC) were implemented more smoothly than those implemented by the PCs. A number of difficulties were encountered during implementation, including lack of cooperation of local authorities in some provinces; illegal encroachment of local people to pre-defined right-of-ways; long negotiations between investors and affected households on compensation package; and initial lack of cooperation from affected communities.

55. According to the policy requirement, IAs mobilized independent monitoring consultants to assess the implementation of social safeguard instruments, such as the Resettlement Plan (RP) and the Ethnic Minorities Development Plan (EMDP). At the end of the project, the overall compliance with social safeguard policies triggered by the Project was Satisfactory.

56. **Environmental safeguards.** The project was classified as Environmental Category B. The only environmental safeguard policy triggered was Environmental Assessment (OP/BP 4.01). Potential impacts identified for the rehabilitation and installation of LV and MV lines and associated transformers were localized soil erosion, dust, noise, and solid waste management. However, these potential impacts were identified as minor to moderate and manageable.

57. The EVN prepared an Environmental Guidelines and Framework (EG&F) which provides guidance on the EA process to be adopted for subprojects that were to be considered for financing under the project to ensure compliance with relevant government regulations and Bank safeguard policies. The subproject EAs and EMPs were satisfactorily prepared in line with the EG&F and included detailed practical mitigation measures and estimated budgets for their implementation, institutional responsibilities, monitoring plans, and capacity building for environmental management and supervision. Specific requirements were included in all bidding documents to ensure effective execution of the mitigation measures during construction. Training on environmental management and monitoring of EMP implementation was provided by the Bank to the PCs, the staff of the PMUs in the distribution companies and in EVN, local authorities and contractors. Monitoring of EMP implementation was carried out by the technical staff of each PMU. An independent safeguards consultant, hired by the EVN also provided semi-annual reports on EMP implementation, including results of consultations with local communities regarding environmental concerns and complaints. There was also community-based monitoring of EMP implementation, which was piloted under the RE1 project and also proved to be successful in the RE2 project because communities have a special interest in ensuring that environmental impact is minimized. The EMPs were implemented satisfactorily as confirmed by the PMUs and the independent safeguards consultant in project progress reports. Bank missions consistently rated environmental performance as Satisfactory during project implementation. There were no outstanding environmental safeguard issues.

58. **Financial management.** Project performance in financial management (FM) was maintained at Moderately Satisfactory. The project financial management system and

arrangement provided adequate assurance for the use of project funds for intended purposes. The below are the issues identified during implementation.

a) The FM capacity at provinces' PMUs varied and many basic financial reporting and internal control procedures were not strictly followed. Since the project was implemented in 25 provinces, once being addressed in some particular provinces, the FM matters raised in Aide-Memoires recurred at other provinces.

b) Regarding the inventory management practice at provincial level, there was an instance of lost materials or diversion of materials outside the project in one province. There was also a case of goods consigned to third party warehouses without valid documentation to secure the consignment in another province. At the end of the project, the two provinces were prepared to refund for these materials with a total refund amount of about $ 36,700 (VND 772 million) to the Bank upon receipt of invoices from LOA client service.

c) Regarding the quality of financial reporting and oversight, there was a lack of review of audit reports and audited financial statements before submitting to the Bank and qualified entity audit reports.

59. The above FM issues did not have a significant impact on either the overall outcomes of the project or the achievements of the PDOs.

60. **Procurement.** Project implementation performance for procurement was rated satisfactory. The project included a very large number of contracts and complex decentralized arrangements for procurement. There were more than 1,000 contracts, mostly for the procurement of goods, mainly through international competitive bidding (ICB), and procurement of works, mainly through national competitive bidding (NCB). Procurement processes for these contracts were managed by 29 PMUs located throughout the country. With the exception of contracts tendered during the price escalation period, the bidding of most contracts resulted in cost savings of 10-15 percent compared with the official pre-bid cost estimates.

61. Major procurement issues that caused some delays included: (a) weak procurement capacity of some PMUs especially early in project implementation; (b) inadequate understanding of Bank procurement guidelines by a number of provincial agencies responsible for review and clearance of PMU procurement decisions; (c) weak contract management capacity in some provinces; (d) the nature of works–small and scattered in remote rural areas–failing to attract strong and capable contractors; (e) the unavailability of construction sites in some provinces at the timing required in contracts. However, this situation improved as the IAs learned from their experience and with Bank support. The Bank's close oversight and detailed guidance in all phases of the Project helped to ensure the transparency and effectiveness of all procurements, thus contributing to the IAs' ability to procure quality goods and works in a competitive manner.

62. Some complaints were reported and were resolved in a satisfactory manner. No cases of fraud and corruption have been detected to date.

2.5 Post-completion Operation/Next Phase

63. **Post-completion arrangements.** Following completion and commissioning of MV and LV network rehabilitation and expansion, the ownership and operation of the

assets have been transferred to the PCs, while a small number of subprojects are under the management of the LDUs. Subprojects under PCs' management will be technically and financially sustainable considering the PCs' technical and financial capacity. Subprojects currently under LDUs will also be transferred to PCs. The process of asset handover needs to resolve differences in valuation of the assets to be transferred, primarily due to the mismatch between the depreciation period allowed for in government regulations and the on-lending repayment period in the FA for the Bank credit. This issue was pointed out in the Aide Memoire dated July 22, 2014, and the government was asked to provide clear guidance on this issue.

64. **Follow-up activities by the Bank:** Several Bank financed projects have been built on the positive outcomes of the RE2 project. In particular, the Rural Distribution Project (RD, Cr.4444-VN, closed in 2013) is the direct follow-up to the Project, focusing on improving the reliability and quality of medium voltage service to the targeted retail electricity distribution systems[6]. The Distribution Efficiency Project (DEP, Cr. 5156-VN, ongoing) continues focusing on further improving the quality and reliability of supply in the PCs' networks. Projects supporting power sector reform and financial viability such as the Third Power Sector Reform Development Policy Operation (PSRDPO3, approved on June 30, 2014); and (ii) financial diagnosis study for the EVN and its subsidiaries will help contribute to improving the PCs' financial position. Other projects such as the Transmission Efficiency Project (TEP, approved in August 2014) and Trung Son Hydropower Project (Loan 8041, on-going) include TA components to improve the technical and financial capacity of the EVN and its subsidiaries.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

65. The project remains highly relevant in Vietnam's current policy priorities as well as the Bank's Country Partnership Strategy (CPS). Vietnam has made significant progress toward achieving universal access to electricity and improving reliability of the power supply, and these goals continue to be a priority in national policy as stated in Vietnam's Socio-economic Development Plan (SEDP) 2011-2015 and its Socio-economic Development Strategy (SEDS) 2011-2020, both of which aim for sustainable economic growth based on improving quality, effectiveness and competitiveness.

66. The project objective is still relevant for the competitiveness and sustainability pillars of the Bank CPS for the fiscal year 2012-2016, which in turn aligned with the SEDP and SEDS. The RE2 project contributed to competitiveness pillar 1.2 (improved quality and efficiency of infrastructure services) through improving the quality of electricity distribution infrastructure and service delivery in Vietnam, while its support to reduction of losses and GHG emissions contributed to climate change mitigation under the sustainability pillar 2.2 (strengthened environmental protection and management).

[6] The Rural Distribution Project was approved in 2008 when a large number of subprojects under REII original project almost finished and the MV system in some places has become a bottleneck in the power flow from the transmission system to the low voltage systems.

3.2 Achievement of PDO and GEO

67. The overall PDO was to "(a) improve access to (b) good quality, (c) affordable electricity services to rural communities, in an (d) efficient and (e) sustainable manner to support Vietnam's efforts towards socio-economic development". The underlined five aspects are assessed as follows:

(a) Improve access. Table 2 shows the status of outcome indicators regarding access improvement. Major upgrading and/or expansion of rural power network carried out by the project contributed to the improvement of electrification rate in the project provinces significantly exceeding the target values. The indicators for physical assets for LV networks (LV line and meter) also made significant progress but did not achieve the revised target value due to a negative economic factor (project cost escalation due to inflation), which is out of the IA's control. However, looking into intermediate indicators, number of communes participated in the project also largely exceeded the target values and actual subprojects were well implemented (for figures by provinces, see Table A2-1 of Annex1). This is because the PPCs and NPC optimized the Bank's finance to disseminate the benefits as many rural communes as possible. In the original project, investments at the commune level were done intensively of which both main lines and branch lines of the LV networks were rehabilitated with the new materials, thus requiring the large volume of LV lines invested in a commune. In the AF, the PPCs and NPC found that investments should be done in a more efficient way: the new investments were done for the main lines and the old materials (collected from the existing networks) were utilized for branch lines. In addition, meters were provided by LDUs or PCs from their own sources. Therefore, although the lengths of LV lines and the number of meters at both commune and project level are lower than the targets, the number of project participating communes and number of benefited HHs well exceeded the targets. For MV assets, a revision of investment plans by PCs after the Project approval resulted in MV lines exceeding and capacity not achieving the target values. The borrower ICR shows that the funds for filling the capacity targets were paid by the PCs.

Table 2: Achievement of outcome indicators in improving access

Indicators	Base Line	Original Targets	Revised Targets	Achieved Values
PDO indicator				
Rural communities with electricity on average in project provinces (% HH with access)	60	85	90	98
Intermediate indicators				
Number of communes under legal management	0	1,200	1,500	1,974
Length of LV lines installed (thousand circuit km)	0	30	32	27.7
Number of households with meters installed in the project area (thousands of meter)	0	2,500	2,700	1,915
Capacity of transformer installed (MVA)	0	900	1,100	700
Length of MV lines installed (thousand circuit km)	0	4.0	4.3	5.3

(b) Good quality. During the ICR mission, provincial department of industry and trade (DoIT), local authorities, LDUs and end users reported that reliability of supply and safety in the rehabilitated systems have significantly improved, compared to pre-

project period. Households now can use most home appliances, tools and machinery which they could not use before because of unstable voltage.

(c) Affordability of electricity service. Due to the operational improvement of the LDUs, the cost recovery price for electricity was reduced from 2,000 VND/kWh to 1,300 VND/kWh, showing the increasing capability for the LDUs and PCs to supply affordable electricity. Furthermore, according to a study[7], the share of electricity expenditures as a percentage of total cash expenditures in 2012 was calculated to be only 1.7% in the midlands and northern mountains, 1.8% for northern and coastal central, and 1.9% for Mekong Delta areas, where most of the Project provinces are located. These figures strongly suggests that the price of electricity in the project areas has become affordable to all HHs (see section 3.5 (b) for more details).

(d) Efficiency in service delivery. Technical performance of LDUs has been improved through the Project, with distribution losses going down to 10 percent from the pre-project levels of 30 percent. Economic and financial analysis (see section 3.3 and Annex 3) indicates the improvement of distribution loss and higher utilization of the invested assets stemming from expanded electricity consumption has brought positive financial effects to LDUs.

(e) Sustainability in service delivery. The two indicators for regulatory environment to ensure sustainability of rural electrification has been achieved by the issuance of the Prime Minister Decision No. 21 in 2009, stipulating (i) a uniform tariff system applicable nationwide including rural areas; (ii) sustainable LV network management applicable to LDUs and PCs; and (iii) guidelines for rural electrification by provinces. This Project supported these aspects by proposing LV management framework to be better operated and maintained by PCs and by providing a TA to support developing national rural electrification strategy up to 2020. Another indicator for capacity building has been also achieved by providing short and long term trainings were provided to 5,700 LDU and PC staff exceeding the target of 2,500.

This project, in particular, contributed to resolving the lack of basic maintenance capability by providing technical training to LDU technicians, and to enhancing accounting and management capability of LDU to senior management and accounting personnel. In addition, stemming from the needs from PCs who are now more responsible for the service delivery to rural areas, this Project provided training for PC staffs to improve customer care skills with the goal of providing the best services with reasonable cost from the rural electrification program.

68. The project provided access to 325,000 households located in remote rural areas which otherwise would not have been connected. As a result, the rural electrification rate in the participating communes reached 98.8 percent in 2013 (see Table 3). The rate would have been 86.7 percent if not counting the new connections achieved in this project, which is almost the same with the value measured at the project appraisal. This Project has clearly accelerated the electrification rate in the participating areas.

[7] Nguyen Viet Cuong, Note on Power Sector and the Poor in Vietnam, Using the Vietnam Household Living Standard Surveys 2010 and 2012, prepared for the World bank (2013)

Table 3: Electrification Rate in Participating Areas, 2005 and 2013

	Number of HH in participating communes	Number of connected HH in participating communes	Electrification Rate
2005	1,560,207	1,347415	86.4%
2013 (with project)	2,690,100	2,656,716	98.8%
2013 (without project)	2,690,100	2,331,716	86.7%

69. **Overall, the outcome of this Project is assessed as Satisfactory.** As the value of PDO indicators has been formally revised during the project, the achievement needs to be assessed against both original and revised target values[8].

- **Rating against the original target at the time of AF is assessed satisfactory.** A comparison of progress against the project indicators at the AF show the progress of 50 percent of the original targets, clearly indicating being on-track to fully achieve the original target at completion (not assuming price escalation). But the cost increase due to inflation and increasing demand from the IAs to scale up the implementation raised the necessity of the AF.
- **Achievement against the revised target at completion is also assessed satisfactory.** The project achieved its PDO, through major upgrading and expansion of rural power networks, enhanced management and financial sustainability of those networks, and capacity building of key sector entities. Targets for all the PDO indicators were fully achieved or exceeded, and five out of eight intermediate outcome indicators were fully achieved, with significant progress in the targets of the remaining three indicators, when compared to the baseline. More than 2.65 million households benefited from the project.

70. **The target for the GEO indicator has been achieved.** Significant improvement of distribution losses from around 30 percent to 8-12 percent reduced emissions of carbon by 365,000 tons, which surpassed the target of 310,000 tons[9].

3.3 Efficiency

71. An ICR stage economic and financial analysis was conducted for evaluating Components A through D. These components account for 95 percent ($314 million) of the total project cost at the appraisal stage; 97 percent ($560 million) of the total project cost at the AF stage; and 99 percent ($554 million) of the total project cost at the completion stage. In this section, the total project cost means the sum of that funded by the Bank support and paid by the counterpart fund. The detailed methodology and results are shown in Annex 3.

72. **Economic analysis:** The Economic Internal Rate of Return (EIRR) and Net Present Value (NPV) for the whole Project at completion were 18.2 percent and $661.5 million, respectively, indicating that the subprojects were economically viable and increased social benefits by distributing more power with improved quality. The EIRRs

[8] See Annex B of the Implementation Completion and Results Report Guideline published in August 2006 and updated in July 2014 concerning the rating the outcome of projects with formally revised objectives.

[9] Use the same methodology as in the PAD for measurement of incremental carbon savings

for the original subprojects were almost the same between appraisal and completion, indicating that the factors improving economic efficiency (for example, cost overestimation at appraisal stage, increased consumption level) have been offset by the factors affecting economic efficiency (for example, cost inflation during 2008-2009). The values for the additional subprojects were also sound and better than the original subprojects, but several data on province level shows reduced economic return compared with the estimation at appraisal. This is because of the overestimation of electricity consumption levels by households and higher household incomes assumed at the time of peak inflation during 2008-2009.

Table 4: Summary of Economic Analysis

	EIRR(%)	NPV@10% (US$ million)	Coverage(*1)
At appraisal	18.2	248.9	95%
At revised appraisal	N/A(*2)	N/A(*2)	97%
At completion	18.2	661.5	99%

*1: Coverage refers to the percentage of total project cost for which EIRR was calculated.
*2: EIRR/NPV for the whole project was not calculated in the Project Paper of the AF. The values for the province level are shown in Table A3-2 of Annex 3.

73. **Financial analysis:** The Financial Internal Rate of Return (FIRR) and NPV for the whole project at completion were 6.5 percent, and $567.9 million, respectively. At the original appraisal, the FIRR was calculated as 2.1 percent, and therefore the subprojects were generally not considered to be financially viable because of the nature of rural electrification for which per capita network investment cost tends to be high in more remote areas. However, the financial indicators at completion stage have been improved because household energy consumption levels remarkably increased as a result of network expansion to the remote areas. Financial viability of the invested assets is largely dependent on the reduced losses of the network and the difference between selling and buying price. Future perspectives on this aspect are discussed in section 4 and Annex 3.

Table 5: Summary of Financial Analysis

	FIRR(%)	NPV@2.25% (US$ million)	Coverage(*1)
At appraisal	2.1	-47.5	95%
At revised appraisal	N/A(*2)	N/A(*2)	97%
At completion	6.5	567.9	99%

*1: Coverage refers to the percentage of total project cost for which FIRR was calculated.
*2: FIRR/NPV for the whole project was not calculated in the Project Paper of the AF. The Values for the province level are shown in Table A3-4 of Annex 3.

74. Based on the economic efficiency meeting the original expectation and the financial efficiency exceeding original expectations, the efficiency of this project is rated Satisfactory.

3.4 Justification of Overall Outcome and Global Environment Outcome Rating

Rating: Satisfactory

75. The overall outcome of the RE2 project is rated as Satisfactory based on high relevance of the project to the country policy and the Bank's CPS, Satisfactory rating of achievement of PDO/GEO, and Satisfactory rating for efficiency.

3.5 Overarching Themes, Other Outcomes, and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

76. Although a specific study to assess impacts of the RE2 project on poverty, gender, and social development was not conducted, a recent study of rural electrification in Vietnam showed that access to good quality electricity supply contributes to improving the quality of life for rural families[10]. The study points out that the benefits include financial savings from reduced use of kerosene for lighting and batteries; and increased ownership of time-saving appliances, freeing up time otherwise spent on household chores for other productive activities, reading, socializing and leisure. The availability of electricity has also contributed to higher school enrollment of rural youth, increased farm productivity, and higher household incomes.

77. Gender and social aspects have been assessed from the perspective of tariff reform. Since issuance of the PM Decision No. 21, residential electricity tariffs have continually increased towards reaching cost recovery levels–a key component of sector financial sustainability. As of August 2013, the average retail tariff had reached 1,509 VND per kWh (7.1 cents per kWh). A recent assessment of the impact of tariff increases found the following[11]:

(i) On national average, Vietnamese households spent 2.1 percent (2.4 percent for the poor) of their total expenditure on electricity payments in 2012, indicating the affordability of electricity.

(ii) The share was only 1.7% in the midlands and northern mountains, 1.8% for northern and coastal central, and 1.9% for Mekong Delta areas, where most of the Project provinces are located.

(iii) Even after taking into account the price increase in 2013 and hypothetical increase in 2014, the impact is acceptable and electricity remains affordable for all income groups.

(iv) Social tariffs for low-income customers, which were introduced by PM Decision No. 268/2011 on the retail electricity tariff in 2011, have remained at an affordable level. Poor households consuming less than 50 kWh per month are charged a tariff of VND 993 per kWh (4.7 cents per kWh), and each household receives VND 30,000 per month support in cash.

(v) The difference in terms of the share of electricity expenditure between male-headed and female-headed households is small.

78. This assessment indicates that overall electricity remains affordable for households, including the poor in remote areas. Looking ahead, it will be necessary to continue to monitor the affordability because of the upcoming government initiatives including: (i) transitional arrangement toward cost reflective tariffs for financial

[10] ASTAE 2011, "The Vietnam Rural Electrification Experience: State and People, Central and Local, Working Together", The World bank & Asia Sustainable and Alternative Energy Program (ASTAE), The World Bank, Washington DC.

[11] World Bank. 2014. Vietnam - Third Power Sector Reform Development Policy Operation Program Project. Washington, DC: World Bank Group.

sustainability of the sector[12]; and (ii) overall social protection reform under consideration, which could have an impact on the existing support scheme for electricity payment[13].

(b) Institutional Change/Strengthening

79. The RE2 project was implemented during a time of significant institutional change in Vietnam's power sector. The project contributed to institutional strengthening during this change process through Component E by: (i) helping transform LDUs into legal entities; (ii) strengthening the abilities of the LDUs/PCs in commercial, technical, and financial management of electricity distribution networks; and (iii) disseminating and replicating emerging good practices in other LDUs participating in later project phases.

80. Support to institutional strengthening under the RE2 project has been effective. The training program, which was developed based on a needs assessment, was attended by many more LDU staff than originally planned and highly appreciated by the participants. The quality of the training was relevant to the technical, commercial and financial aspects of LDU sustainability. The LDUs reported in their borrower ICRs that the training helped improve the daily operation and management of LV networks such as efficient preparation of business plan, more systematic book and record keeping, and reduced time for discovering and fixing problems, etc. This achievement was backed by knowledge exchange among the PCs and LDUs, and study tours to learn from international experience in rural electrification.

81. Looking ahead, with the absorption of many LDUs by larger PCs, the financial and technical sustainability of the PCs will be a key to maintaining project outcomes.

(c) Other Unintended Outcomes and Impacts (positive or negative)

82. Not applicable.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

83. Not applicable. The comments from the stakeholders are provided in Annex 7 (Summary of Borrower's ICR).

4. Assessment of Risk to Development Outcome and Global Environment Outcome

Rating: Moderate

84. Main risk factors that may affect the sustainability of the RE2 project outcomes include increasing energy consumption in project areas; technical capability of the LDU and PC for operation and maintenance; and financial stability of the LDUs and PCs. The ways in which these factors may pose risks to the PDO and GEO are described below.

a) **Reliability and quality of power supply through increased energy consumption.** The risk that increasing energy consumption in project areas might lead to deterioration of the reliability and quality of power supply over time is

[12] PM Decision No. 2165 (2013) allows price increase up to VND 1,835 per kWh (9.2 cents/kWh) by 2015.

[13] The World Bank supports Vietnam's social protection reform through Social Assistance System Strengthening Project (P123960). This program includes supporting the "Opportunity Program" to be piloted in four provinces after 2015, in which several social protections including the electricity subsidy of VND 30,000 per month will be consolidated to a single protection.

assessed as Moderate. The risk has been mitigated by the implementation of Rural Distribution (RD) Project and Distribution Efficiency Project (DEP), which aims to improve the performance of PCs in quality and reliability of electricity services. Areas of implementation largely overlap with those in the RE2 project, and the subprojects are built on those areas implemented by the RE2 project.

b) **Limitations to technical capability of LDUs and PCs.** The risk that limitations to technical capability of LDUs and PCs may affect operation and maintenance of network assets and hence their sustainability is assessed as Low. The PCs have a proven track record of operating and maintaining distribution assets in a technically acceptable manner. Technical capacity of the LDUs has improved by the capacity building under the RE2 project. Moreover, there is continued support from larger PCs to the LDUs – in fact, there are many cases where the LDUs are supported by technical advisors sent by the nearest PCs. It is highly unlikely that the assets are poorly utilized due to a lack of technical experience.

c) **Weak financial situation of the LDUs.** The risk that weak financial situation of the LDUs may affect sustainability of project outcomes is rated as Substantial. The ICR team's analysis shows that profits for the LDUs has been reduced due to the tariff restructuring that has been implemented since the issuance of PM Decision No. 21 in 2009. It is estimated that if the current tariff systems are maintained, 75 percent of LDUs in the plains and all (100 percent) LDUs in mountainous areas would need to transfer their network to the PCs. This risk will be mitigated if, as encouraged in PM Decision No. 21, LV assets of the LDUs are transferred to the more financially credible PCs. In fact, the ICR team has been informed that most of the invested LV assets have been or are being transferred to the PCs' management. See section C of annex 3 for details.

d) **Financial Stability of the PCs.** The risk of financial stability of the PCs affecting project outcomes is assessed as Substantial. The Bank-financed TA on the strategic options for financial recovery of the power sector indicates that further rationalization of the tariff system and price level is critical for the PCs to maintain an appropriate level of financial health which allows both good operation and maintenance of the invested distribution assets and meeting huge investment needs by 2020 (see section D of annex 3 for details). This risk will be mitigated by the Bank's comprehensive support to Vietnam combining investment projects such as the DEP, TA such as 'Strategic options for financial recovery of power sector' and 'Wholesale Market Development', and a new series of Power Sector Reform Development Policy Operations.

85. Taking all these aspects into account with a particular emphasis on financial sustainability of the LDUs and PCs, the risk to the sustainability of development outcomes is assessed as Moderate because the on-going Bank-financed projects and various TA activities have been mitigating those risks effectively.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: Satisfactory

86. Bank performance in ensuring quality at entry is rated Satisfactory. The project design was aligned with the direction of the GoV's rural electrification policy at the time of approval. Responding to the emerging issue of quality and reliability of electricity supply, the project design correctly incorporated rehabilitation in its design, and included capacity building efforts to address institutional shortcomings alongside network expansion. The project took into account lessons learned from past operations, including the RE1 project, and analytical work. Among the lessons incorporated into design, the use of a flexibility mechanism to allow efficient use of funding in response to changing circumstances was the key to achievement of the PDOs. Other lessons that were incorporated, and had a bearing on achievement of results are: (i) institutional change should be planned carefully with full participation of local authorities to ensure effective implementation; (ii) importance of community participation should be fully recognized; and (iii) pre-planning of procurement activities is essential. The implementation arrangements, according to which rehabilitation of LV networks was carried out by provinces and rehabilitation of MV networks was carried out by the PCs were appropriate, given the institutional structure of the power sector at the time of appraisal. Social and environmental safeguards issues were identified and addressed adequately in the project design, in a way that minimized social and environmental impacts and ensured compliance with the relevant Bank policies.

(b) Quality of Supervision

Rating: Satisfactory

87. **Investments in LV and MV networks (Components A-D).** The Bank team, through periodical implementation support missions as well as ongoing exchanges, regularly and thoroughly monitored the project implementation progress of each participating province and IA, worked with the PMUs for capacity building and implementation support, and worked with the counterparts to identify and develop solutions to issues encountered during implementation, such as cost inflation, land acquisition and compensation delays. The team and IAs gradually developed a standard reporting form, which streamlined implementation support for as many as 25 provinces. One drawback was that the team could have assessed the actual cost performance better when determining the revised target at the time of the AF rather than relying on the cost information for the RE1 project.

88. **Technical assistance (Component E).** The Bank team provided adequate support to help the government and the IA to achieve the objectives set out in the PAD. The training program, which was developed based on a needs survey, surpassed the target. The quality of the training was relevant to the technical, commercial and financial aspects of LDU sustainability.

89. The quality of supervision for fiduciary, procurement and safeguard aspects has been satisfactory throughout the project. Specialist Bank staff worked with counterparts to identify fiduciary and safeguard issues in a timely manner, and advised the IAs on options for addressing issues and achieving compliance with the Bank policies. Necessary training was also provided by the Bank. Most IAs, in their borrower completion reports, acknowledged the vigorous implementation support of Bank experts throughout the project.

90. It is assessed that the Bank team was adequately composed of specialist staff based in Hanoi and technical staff from Washington D.C., to achieve the above quality of supervision. Key staff including the Task Team Leader, safeguards, fiduciary and procurement specialists were all Hanoi-based, which enabled an effective decentralized project implementation allowing intense communication and timely ad-hoc advice to IAs.

91. In light of the above, the Bank's supervision quality is assessed as Satisfactory.

(c) Justification of Rating for Overall Bank Performance

Rating: Satisfactory

92. The overall Bank performance is rated Satisfactory. This rating reflects the technically sound project design; strong implementation support to the client; effective monitoring of as many as 25 provinces; and good technical and project implementation advisory support provided in close coordination with the IAs and the Bank fiduciary and safeguard specialists, which together contributed to the achievement of project outcomes.

5.2 Borrower Performance

(a) Government Performance

Rating: Satisfactory

93. A significant achievement has been made in rural electrification in Vietnam, with household electricity access rate growing from 2.5 percent in 1975 to over 97 percent in 2013. This is due to the government's continuous efforts in addressing a wide array of challenges and balancing the interests of the local, provincial and central governments. An important milestone for rural electrification was made during the RE2 project. PM Decision No. 21 dated 2009 stipulated a unified national tariff for all residential consumers, alongside an incremental block tariff (IBT) arrangement, with a new life block to protect poor customers, who mostly reside in remote areas. The decision also allowed the take-over of financially weak LDUs by the PCs. In fact, a significant portion of rural distribution assets under the financially weak LDUs were absorbed by the PCs with more financial and technical capability.

94. The central government guided the provinces to include rural electrification efforts in their social development plan/strategy, which was one of the strongest incentives for the provincial governments to assign higher priority to the RE2 project.

95. Going forward, the GoV continues to be committed to ensuring the sustainability of achievements to date, by approving the overall program (PM Decision No. 2081 dated 2013) of power supply for unelectrified rural households from the national grid and/or renewable energy sources in the period 2014-2020 with the investment capital needs of $1.5 billion. In addition, the government shows a strong intention to realize a financially sustainable power sector, which is evident by the collaborative work with the Bank on this critical issue as described in section 4.

(b) Implementing Agency or Agencies Performance

Rating: Satisfactory

96. The participating provinces as IAs were able to complete almost all of the planned subprojects, because of their continuous commitment and dedicated project management

activities. Although the provinces faced difficulties, which included limited experience of the PMUs; insufficient coordination between the PCs and provinces; lack of procedure for compliance and monitoring of safeguard, fiduciary and procurement aspects; and price escalation, hindering the physical implementation progress, IAs gained experience over time and the implementation gradually was on track with the original schedule.

97. The PCs as IAs played a greater role in this project. Guided by PM Decision No. 21, the PCs implemented not only MV grid expansion and rehabilitation, but also LV rehabilitation and take-over of the LV assets originally managed by financially weak LDUs. It was observed by the ICR team that the PCs continuously assisted the LDUs through technical advice on the operation and maintenance of the local grid system. Meanwhile, as stated in section 2.4, the PCs faced several implementation issues, and some of them, particularly the quality of financial reporting, continued to be a problem. Streamlining of implementation and better synchronization of MV and LV construction works has been an issue throughout the project period.

98. Proactive participation from communes was effective to the successful implementation of subprojects with good technical quality. In each project commune, a PMG was established to support project implementation. It was reported that the quality of construction work was regularly overseen by this PMG. The communities recognize that the LV networks are their own assets, and that the quality of the completed assets will affect their daily life.

99. Overall performance of IAs is rated satisfactory. Strong commitment and dedicated work by both the provinces and PCs, combined with proactive community participation, led to successful completion of this project. Although there were moderately satisfactory FM aspects, their impact to achieve the PDO was not significant.

(c) Justification of Rating for Overall Borrower Performance

Rating: Satisfactory

100. Given the government's satisfactory performance and the IA's satisfactory performance, the overall borrower performance for this project is rated Satisfactory. The strong commitment from both the central and provincial government and more importantly proactive engagement from the local community led to the successful completion of the project. Although the IAs faced several implementation and fiduciary issues, these did not cause significant impacts to the achievement of the PDO.

6. Lessons Learned

Project Design

a) Strong commitment by the government is essential for project success, and the degree of such commitment is evidenced by several factors, including: (i) government vision for rural electrification, and the commitment on policy guidance, regulation and physical investment; and (ii) proper guidance by the government to the relevant IAs.

   In the RE2 project, the central government guided the provinces to include rural electrification efforts in their social development plan/strategy, which is one of the most important provincial activities. This guidance was a strong incentive for the provincial governments to assign higher priority on the RE2 project.

b) Phased approach is important when a project has a large number of subprojects that are implemented in multiple locations over a long period. This approach is particularly important to power distribution projects to accommodate the changing situations of IAs. This approach helps better listing of subprojects, leading to efficient use of funds and better achievement of the PDO.

c) Key performance indicators (in particular, quantitative indicators) need to be set using the latest cost information/data, and updated where appropriate, especially if there is an additional financing. This lesson is particularly important in the presence of steep currency inflation or deflation.

d) A single coordinated design is needed when various stakeholders are involved in the actual implementation. To do this, considerable time is needed, sometimes leading to slower implementation of the whole project.

Project and Contract Management

a) Project implementation tends to get delayed when project management capacity of the IAs is limited or when they have little experience on Bank procedures. In that case, the Bank team should be realistic in planning the implementation and disbursement schedule, particularly at an early project stage. To enhance the familiarity to project management on Bank's procedures, it is desirable to carry out information dissemination activities such as project launch workshop, develop project operation manuals, and conduct relevant implementation support mission.

b) Community supervision of technical quality and safeguards aspects is a highly effective means of enhancing community ownership. This also helps mitigate disputes and helps resolve issues promptly.

c) Changes in macroeconomic conditions can hamper the smooth implementation of the project. In this project, a sharp inflation caused delays in project implementation by affecting the underlying contracts, which were terminated in some cases or had to go through lengthy rebidding processes in others.

Social and Environmental Safeguards

a) For further strengthening the implementation of social safeguards, attention should be given to: (i) information disclosure and consultation in a more targeted/tailored manner; (ii) implementation of developmental activities (for example, training) provided to ethnic minority communities; (ii) close collaboration with the local authorities to match the proposed developmental support and local needs.

b) Involving local authorities is critical to successful safeguard activities. In fact in the RE2 project, land acquisition and resettlement activities required under investments implemented by the provincial PMUs were implemented more smoothly than those implemented by the PCs.

Financial Management

a) In a project involving many IAs with different FM capacity, Financial Management Manual (FMM) should be enforced and should serve as guidance for FM staff at all levels throughout the implementation of the projects. It is also suggested that future power projects involve less PPMUs (not more than ten) to

ensure adequate resources from both the Bank's team and the Central PMU can be allocated to FM supervision and monitoring.

b) The inventory management procedures and contract management should be clearly set out in the FMM and with training provided to all IAs.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

101. IAs have agreed with the contents and the rating provided in this ICR report.

(b) Cofinanciers

102. Not applicable.

(c) Other partners and stakeholders *(for example, NGOs/private sector/civil society)*

103. Not applicable.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (USD Millions)

Second Rural Energy Project - P074688				
Components	**Appraisal Estimate*1**	**Revised Estimate*2**	**Actual/Latest Estimate**	**Percentage of Revised Appraisal**
Rehabilitation and Expansion of LV Systems	172.9	316.6	383.6	121.2
Household Connection (paid by user)	34.7	46.5	50.0	107.5
Rehabilitation and Expansion of MV Systems in the Northern Region	35.0	86.8	68.7	79.1
Rehabilitation and Expansion of MV Systems in the Southern Region	9.3	7.3	5.23	71.6
Rehabilitation and Expansion of MV Systems in the Central Region	14.8	27.9	20.33	72.9
TA and Capacity Building (IDA)	1.75	1.75	0.21	12.0
Taxes and Duties	14.0	25.0	26.0	104.0
Total Baseline Cost	**287.95**	**511.85**	**554.07**	**108.2**
Physical Contingencies	14.0	25.0	0.0	0.0
Price Contingencies	14.0	25.0	0.0	0.0
Total Project Cost	**315.95**	**561.85**	**554.07**	**98.6**
IDA service charge	5.2	9.9	3.0	30.3
Commitment Fee	3.1	3.1	0.0	0.0
Total Financing Required	**324.25**	**574.85**	**557.07**	**96.9**

Source: PAD, PP and Borrower's ICR

*Note:**1: Estimated at the time of the PAD in 2004; *2: Estimated at the time of the AF in 2009

VN-GEF-RURAL ENERGY 2 - P080074				
Components	**Appraisal Estimate*1**	**Revised Estimate *2**	**Actual/Latest Estimate**	**Percentage of Revised Appraisal**
TA and Capacity Building (GEF)	5.25	5.25	4.92	93.7
Total Financing Required	**5.25**	**5.25**	**4.92**	**93.7**

Source: PAD, PP and WB's data

*Note:**1: Estimated at the time of the PAD in 2004; *2: Appraisal estimate was not changed at the time of AF.

(b) Financing (USD Millions)

P074688 - Second Rural Energy Project					
Source of Funds	**Type of Financing**	**Appraisal Estimate**	**Revised Estimate**	**Actual/Latest Estimate**	**Percentage of Revised Appraisal**
Borrower		69.55	108.35	87.27	80.5
Local Communities		34.70	46.50	50.00	107.5
International Development Association (IDA)		220.00	420.00	419.8	100.0

Source: PAD, PP, Borrower's ICR and Bank's data

Note: $210.04 million was disbursed for IDA40000 and $199.10 million was disbursed for IDA45760
1XDR=1.4888USD (as of October 23, 2014)

P080074 - VN-GEF-RURAL ENERGY 2					
Source of Funds	**Type of Financing**	**Appraisal Estimate**	**Revised Estimate**	**Actual/Latest Estimate**	**Percentage of Revised Appraisal**
Borrower		0.00	0.00	0.00	0.00
GEF		5.25	5.25	4.92	93.7

Source: PAD, PP and Bank's data

Annex 2. Outputs by Component

Component 1: Major upgrading and/or expansion of LV system in the rural power network in 1,200 communes

The component included the rehabilitation and expansion of the LV systems in approximately 1,200 communes in about 30 provinces. The component aimed to improve and expand the power supply to about 2 million households, of which about 200,000 were to be connected. The PPCs of the project provinces were designated as the IAs.

The final number of participating provinces was 25 compared with 30 identified in the PAD. Six provinces asked or were asked to withdraw from the project, mainly due to their inability to comply with the project conditions, such as counterpart funding, converting the management to LDUs, or completion of project preparation in time. On the other hand, one province (Quang Nam province) newly joined the project during the project implementation as a result of the flexibility incorporated in the project design and strong commitments from participating provinces.

During implementation, particularly in 2007-2008, world prices of some key power sector commodities such as aluminum, copper and steel increased markedly and Vietnam suffered a period of high inflation of costs of inputs such as cement and labor. To offset the cost increase and depreciation, the original project could cover only 968 communes.

The approved FA in 2009 aimed to help finance the cost associated with completion of the original project activities as a result of the above mentioned financing gap. The plan was to enable completion of the original target of about 1,200 communes, compared with the 968 for which funds were sufficient; and to implement expanded activities to scale up project impacts and development effectiveness by increasing the number of communes from 1,200 to 1,500.

Although the original project design assumed the project provinces as the IAs for LV rehabilitation and expansion, the new PM Decision No. 21 in 2009 encouraged transfer of rural LV assets from local authorities to the PCs for better management. Since then, the PCs started receiving a part of the rural LV networks. The NPC wanted to take advantage of the financing opportunity of this project to rehabilitate its newly received LV networks to enable distribution and retail business in rural areas. This was formally reflected in the amendment to the project's FA, following the approval of restructuring paper in 2013.

The number of rehabilitated and/or expanded communes, which is the most important performance indicator, was 1,974 compared with the target of 1,500. This substantial success is due to the intention by the PPCs and NPC to disseminate the benefits of the Bank financing to as many rural communes as possible. As a result, the scale of investment per commune became smaller than originally projected.

Table A2-1 shows the implementation results of Component 1.

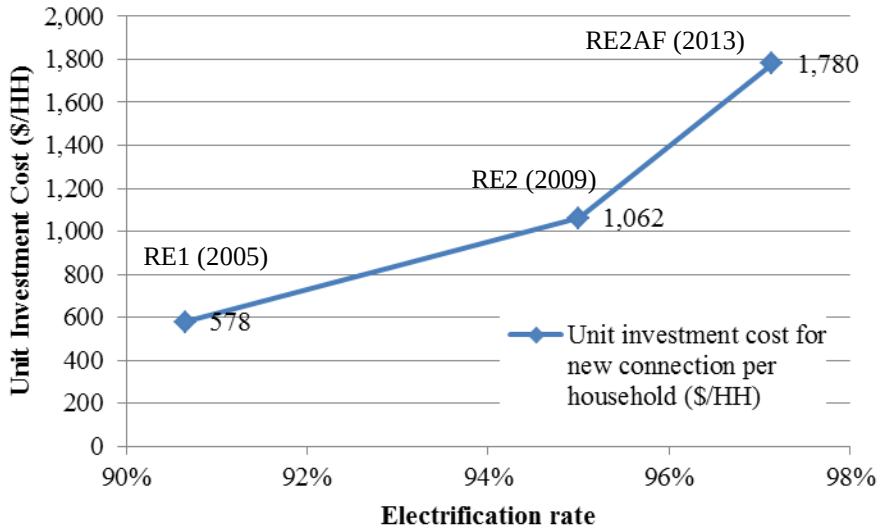
Table A2-1: Component 1 – Summary of Subprojects

Implementing Agency	Original Project			Additional Financing			Completed/Achieved		
	No. of Project Communes	LV length (km)	Number of meters installed	No. of Project Communes	LV length (km)	Number of meters installed	No. of Project Communes	LV length (km)	Number of meters installed
Bac Giang	35	1086.1	70,106	27	446.2	55,542	62	1532.3	125,648
Lai Chau	14	99.7	5,620	2	21.5	1,097	14	103.89	4,213
Cao Bang	25	324.8	6,570	23	208.3	5,230	48	474.982	11,797
Dien Bien	13	108.5	3,990	8	95.9	5,187	24	204.379	9,177
Ha Nam	22	701.2	47,641	24	753.8	71,726	46	1,342.4	103,991
Ha Noi (Ha Tay previously)	23	283.5	46,110	50	1031.3	152,905	83	1,353.9	186,624
Ha Tinh	97	1618.5	121,642	39	769.9	49,911	136	2,224.4	154,575
Hai Duong	60	742.6	99,246	**No implementation of AF**			59	612.8	59
Hoa Binh	20	343.8	19,789	35	525.6	21,354	53	869.482	42,195
Hung Yen	34	476.0	19,260	48	748.1	84,807	79	1,194.1	104,069
Lao Cai	19	169.2	10,062	16	255.3	11,458	40	386.533	17,150
Phu Tho	55	852.8	71,166	50	432.9	18,317	102	1,717.8	89,492
Nghe An	49	519.8	77,568	46	628.1	0	94	648.662	53,443
Thai Binh	50	1227.1	106,495	34	691.2	66,888	84	1,709.4	172,648
Thai Nguyen	30	543.0	30,808	18	516.1	23,583	48	1,060.4	45,379
Thanh Hoa	50	652.5	56,737	50	734.6	74,932	99	1,387.1	129,324
Vinh Phuc	86	1592.3	145,672	30	405.4	49,865	105	2,124.9	202,031
Yen Bai	37	161.0	22,643	29	391.6	7,629	66	784.546	29,401
Quang Binh	31	462.7	24,671	30	491.5	0	60	961.94	14,607
TT Hue	34	430.1	26,752	4	76.3	8,928	36	497.492	35,268
Quang Nam	60	759.4	48,570	14	252.4	10,713	76	822.818	35,989
Quang Ngai	72	933.6	35,062	**No implementation of AF**			72	1,092.9	72
Binh Dinh	25	343.9	10,053	26	470.5	7,112	51	757.006	14,534
Phu Yen	38	617.0	38,129	**No implementation of AF**			31	576.0	31
Ca Mau	12	476.3	12,373	6	265.8	4,234	19	735.77	14,576
NPC				300	2,500		387	2,536	
Ben Tre							Cancelled		
Tay Ninh									
Dong Thap									
Quang Tri									
Nam Dinh									
Ninh Thuan									
Can Tho									
Total	**991**	**14,591**	**1,118,606**	**909**	**12,712**	**731,418**	**1,974**	**27,712**	**1,915,452**

Source: Borrower's ICRs

The length of LV networks installed was 27,700 km compared with the target of 32,000 km. Also, the number of installed meters was 1,915,000 compared with the target of 2,700,000. This was mainly caused by the performance estimation at appraisal which was based on the unit investment cost for new connections per household ($ per HH) observed in RE1 project in 2005, while actual investment for the RE2 project was carried out in more remote and more geographically difficult areas. The ICR team's analysis shows that unit investment cost for the RE2 project was higher compared with the cost observed in the RE1 project.

Figure A2-1: Unit Investment Cost for New Electricity Connection in Rural Areas



Source: World Bank based on project data

As shown in Table A2-2, rural electrification rate in the participating communes reached 98.8 percent in 2013. The rate would have been 86.7 percent if not counting the new connections achieved in this project, which is almost the same with the value measured at the project appraisal. This project has clearly accelerated the electrification rate in the participating areas.

Table A2-2: Electrification Rate in Participating Areas, 2005 and 2013

	Number of HH in participating communes	Number of connected HH in participating communes	Electrification Rate
2005	1,560,207	1,347415	86.4%
2013 (with project)	2,690,100	2,656,716	98.8%
2013 (without project)	2,690,100	2,331,716	86.7%

Table A2-3: Electrification Rate in Project targeted Communes by Province in December 31, 2013.

No.	Participating Provinces	Total HHs in project communes	Total electrified HHs in project communes	Electrification rate (%)
1	Bac Giang	129,488	129,462	99.98
2	Lai Chau	6,938	4,787	69
3	Cao Bang	14,216	11,515	81
4	Dien Bien	21,028	15,771	75
5	Ha Nam	116,357	116,357	100
6	Hanoi	232,311	232,311	100
7	Ha Tinh	170,118	170,118	100
8	Hai Duong	115,127	115,127	100
9	Hoa Binh	57,410	56,951	99.2
10	Hung Yen	145,820	145,820	100
11	Lao Cai	28,804	27,853	96.7
12	Phu Tho	136,429	136,020	99.7
13	Nghe An	175,736	170,446	96.99
14	Thai Binh	151,891	151,891	100
15	Thai Nguyen	85,603	83,891	98
16	Thanh Hoa	145,209	143,466	98.8
17	Vinh Phuc	181,348	181,348	100
18	Yen Bai	58,036	53,393	92
19	Quang Binh	94,838	94,364	99.5
20	Thua Thien Hue	73,814	73,666	99.8
21	Quang Nam	144,744	142,573	98.5
22	Quang Ngai	160,990	157,770	98
23	Binh Dinh	111,053	111,053	100
24	Phu Yen	92,281	92,096	99.8
25	Ca Mau	40,513	38,487	95
	TOTAL	**2,690,100**	**2,656,536**	**98.8**

Component B: Major upgrading and/or expansion of MV system in the Northern Region

This component aimed to rehabilitate the MV systems in the same project communes in the Northern Region where the LV subsystems were rehabilitated and expanded in Component A. This component was implemented by PC1 (reorganized as the NPC in 2010).

TableA2-4: Component B – Summary of Subprojects

Implementing Agency: NPC								
Original Project			**Additional Financing**			**Completed/Achieved**		
No. of project communes	**MV length (km)**	**Capacity of substation (MVA)**	**No. of project communes**	**MV length (km)**	**Capacity of substation (MVA)**	**No. of project communes**	**MV length (km)**	**Capacity of substation (MVA)**
659	2,514	315.194	1057	1,434	254.3	1747	3,950	569.5

Source: Borrower's ICR

Component C: Major upgrading and/or expansion of MV system in the Southern Region

This component aimed to rehabilitate the MV systems in the same project communes in the Southern Region where the LV subsystems were rehabilitated and expanded in

Component A. This component was implemented by the PC2 (reorganized as the SPC in 2010).

TableA2-5: Component C – Summary of Subprojects

Implementing Agency: SPC								
Original Project			Additional Financing			Completed/Achieved		
No. of project communes	MV length (km)	Capacity of substation (MVA)	No. of project communes	MV length (km)	Capacity of substation (MVA)	No. of project communes	MV length (km)	Capacity of substation (MVA)
12	312.2	6.072	30	338	2.837	42	650.2	8.909

Source: Borrower's ICR

Component D: Major upgrading and/or expansion of MV system in the Central Region

This component aimed to rehabilitate the MV systems in the same project communes in the Central Region where the LV subsystems were rehabilitated and expanded in Component A. This component was implemented by the PC3 (reorganized as the CPC in 2010).

TableA2-6: Component D – Summary of Subprojects

Implementing Agency: CPC								
Original Project			Additional Financing			Completed/Achieved		
No. of project communes	MV length (km)	Capacity of substation (MVA)	No. of project communes	MV length (km)	Capacity of substation (MVA)	No. of project communes	MV length (km)	Capacity of substation (MVA)
236	653.4	118.37	36	54	3.19	272	707.4	121.5

Source: Borrower's ICR

The length of MV networks installed in Components B to D was 5,300 km compared with the target of 4,300 thousand km. The capacity of installed meters was 700 MVA against the target of 1,100 MVA. Reduction in achievement of transformer capacity was caused by the revision of the PCs' investment plan in which more funds were mobilized to the lines and part of the transformer investment was financed by the PC's funds.

Component E: Technical Assistance

At the time of the PAD, the purpose of the TA component was described as follows:

- **Purpose i.** Developing and implementing a framework for regulation of companies and cooperatives and building the capacity of national and provincial authorities in planning and regulation of rural electrification;
- **Purpose ii.** Transforming the LDUs into legal entities;
- **Purpose iii.** Strengthening the abilities of the LDUs in commercial, technical and financial management of electricity distribution companies
- **Purpose iv.** Replicating of the best practices developed in other LDUs participating in the later phases of the project and subsequently.

Main activities that were actually implemented are summarized as follows.

Training needs assessment

The training needs for LDUs were studied in 2007. The study identified a need to train and enhance capacity of stakeholders at all levels including the MoIT, PPCs, EVN and its

PCs and LDUs. The study recommended that priority should be given to building technical, financial and management capability of LDUs.

Phase 1 - technical training for LDUs

Based on the outcomes of the training needs assessment, technical training at basic and advanced levels were carried out to about 1,100 LDU electricians with the aim of ensuring the sustainability of the LDUs. This is regarded as 'phase 1' training, which is further improved and rolled out in the scaled-up phase 2 for a larger number of LDU staff.

Phase 2 - technical training for LDUs and PCs

An improved training program as 'phase 2' was provided during 2012-2014 to the staff of the LDUs and PCs. The total number of participants for phase 1 and phase 2 training reached 2,100. This was below the initially planned number of 6,000[14] because the PM Decision No. 21 in 2009 set forth the new policy encouraging the transfer of completed LV assets from LDUs to PCs. This policy reduced the training needs for LDU staffs.

Training on customer service for PC staff

To further enhance capacity building and respond to a strong demand from the PCs, the MoIT provided short-term training for about 3,600 PC staff to improve customer care skills with the goal of providing the best services with reasonable cost from the rural electrification program. At the outset, the training was provided to 1,600 staff. However, as a result of the high satisfaction rating from the after-training survey and a strong request from the PCs, an additional 2,000 staff were trained through this program.

Survey on the current situation and an assessment on the needs of rehabilitation, upgrading and expansion of rural networks by 2020 and policy mechanisms recommendation

The study aimed to identify (a) general solutions to provide electricity to unelectrified rural areas; (b) recommend policies to achieve the target of rural electrification by 2020; and (c) the potential scale to supply electricity from off-grid renewable resources to rural hamlets and villages located in extremely difficult geographical locations.

Rebuilding the sampling list for rural electrification impact survey and analysis

The objective of this assignment is to rebuild the sampling list including the names and addresses of respondents which were coded in the data set provided by the previous consultants and match them with the data collected during the previous rounds of surveys, which will be used to enable continuation of the fourth round survey to assess rural electrification impact on poverty reduction. The survey will be used to determine appropriate electricity pricing policies, whether there is a need for subsidies in rural areas, and for decision support regarding appropriate sizing of electrification projects.

PMU supporting activities

[14] The training was initially planned for one director, two technicians, and one accountant for each of the 1,500 LDUs participating in the Project.

Support was provided to enhance the capability of the MoIT PMU, including: (a) hiring a full time project officer; (b) hiring a full time interpreter/secretary for speeding up relevant activities; (c) hiring a training consultant to supervise the training process, (d) purchasing equipment for operating the PMU office; and (e) advertising the call for bid, translation, communication, and supervision travel.

Other activities

- Annual review meetings for the period of 2007-2014 with participation of key implementing agencies and related stakeholders. On 26 April, 2014, the MoIT and the World Bank convened a conference with the aim of reviewing 15 years of Vietnam's rural electrification programs and discussing future direction.
- Study tour to Korea, Chile and Brazil during 2013-2014 with the aim of exchanging experiences in the field of rural electrification. The government office, Ministry of Planning and Investment (MPI), MoIT, Ministry of Finance (MOF), provincial PMUs, EVN, State Bank of Vietnam (SBV) and Vietnam Development Bank (VDB) participated.
- Capacity building for the MoIT and EVN's staff through a series of training program in English, Project Management and Planning Skill and Working Efficiency, training course on Master of Business Administration; and Energy Training Week in Paris, France.
- Producing a documentary film on Vietnam's Rural Electrification
- Auditing service for the Project's financial management.

The TA component was funded by the $5.25 million GEF fund, $1.5 million from the Bank Credit, and $0.25 million counterpart fund. The total amount disbursed at completion is estimated to be $4,907,000, equivalent to approximately 70 percent of the budget. The under-projected disbursement is mainly because the phase 2 technical training to LDUs was scaled down due to the government's new policy in 2009 encouraging the transfer of completed LV assets from LDUs to PCs with more technical experience and financial capability.

It is assessed that the aforementioned activities effectively supported the four purposes of this TA component. In phase 1 and 2 of the training program, which was developed based on needs survey, many more LDU staff were trained than originally planned. The quality of the training was relevant to the technical, commercial and financial aspects of LDU sustainability. The training was highly appreciated by the participants. This achievement was backed by (a) knowledge exchange through annual meetings; (b) study tour with the aim of exchanging views with rural electrification stakeholders in different countries; and (c) capacity building of the MoIT PMU for better project management.

Also the activities clearly supported the government in terms of providing a proposal for formulating a long-term electrification policy up to 2020. It is noteworthy to mention that the implemented activities supported enhancing the government's analytic capability to identify poverty reduction effects of rural electrification.

Annex 3. Economic and Financial Analysis

Economic and financial analysis has been conducted for Components A to D of the project. Components A to D account for 95 percent ($314 million) of the total project cost at the appraisal stage, 97 percent ($560 million) of the total project cost at the AF stage, and 99 percent ($554 million) of the total project cost at the completion stage. In this section, the total project cost means the sum of that funded by the Bank support and paid by the counterpart fund.

A) Economic Analysis

Methodology at Appraisal

The economic analysis for the project components was carried out using two scenarios: (i) 'with' the project; and (ii) 'without' the project. The 'with' project scenario means investment in the rural networks for: (a) reduction of losses from 30-50 percent at present to about 8 percent; (b) improvement of the supply and quality of power, so that rural customers can use the power for the production purposes, and can avoid spending on quality improvement devices, such as voltage stabilizers or standby diesel units; and (c) increase in the number of electrified households in the local areas, since at the moment in many communes proposed for the project, electrified households coverage is still less than 80 percent. The 'without' project scenario is 'doing nothing', meaning that there would be no investment for rehabilitation and expansion of the network, and the condition of the existing distribution system would further deteriorate: (a) the losses would increase; (b) rural consumers would not use grid power for productive uses due to major voltage fluctuations; and (c) there would be no opportunity for new connections for households, who will continue to use kerosene for lighting.

The economic analysis was done at the provincial level, which means that all the project communes, for both MV and LV systems, in a given province, were analyzed together, using the cost–benefit methodology. For the estimation of the economic indicators, namely the EIRR and NPV, the following assumptions are made: (a) all the costs are expressed in constant 2003 prices, making no adjustment for shadow exchange rate or shadow wage rate; (b) the capital investment costs for the first phase are considered over 2005-2007, and analyses are done over a project economic life of 20 years (2005-2025); (c) the cost for compensation, land acquisition and service drops are included in the economic cost of the project; (d) operation and maintenance costs are estimated at 2 percent of the investment costs; (e) the input energy bought for the project is estimated to cost 5.5 cent¢/kWh, the long-run marginal cost (LRMC) at the end of the transmission system; and (f) the EIRR of the project component is the discount rate at which the present value of the costs and benefits streams are equal, and the NPV is based on a discount rate of 10 percent, which is approximately the opportunity cost of capital in Vietnam.

Methodology at project completion

The methodology is identical to that used at appraisal, except that: (a) actual costs at project completion are used; (b) a 20 year time horizon covering 2008 to 2028 instead of 2005–2025 for original subprojects and 2010 to 2030 instead of 2009–2029 for additional

subprojects; and (c) the updated long-run marginal cost (LRMC) of input energy bought for the project is estimated to cost 7.5 cents/kWh[15].

For the original subprojects under which the MV and LV parts are rehabilitated and expanded synchronously, the economic analysis was done at the provincial level, which means that all the project communes, for both MV and LV systems, in a given province, were analyzed together. The applied capital expenditure (CAPEX) ratio for these subprojects is 0.93. For the additional subprojects under which rehabilitation of the MV and LV parts are not conducted synchronously, the economic analysis was done for the LV system only and the CAPEX ratio of 2.0 was applied for this type of subproject[15].

Results and discussion

Table A3-1 and A3-2 show the results of economic analysis for original and additional subprojects, respectively. The EIRR and NPV for the whole project at completion were **18.2 percent**, and **$661.5 million**, respectively, indicating that the subprojects were economically viable and increased social benefits by distributing more power with improved quality. The reason for slightly reduced economic indicators in the original subprojects is that the costs of these subprojects at appraisal in mid-2004 were under-estimated. In 2007-2008, the world prices of key electrical materials such as copper and steel significantly increased and Vietnam also suffered high inflation during this period which caused an increase in the prices of domestic inputs such as cement and labor.

The values for the additional subprojects were also sound and better than the original subprojects, but several data on province level shows reduced economic return compared with the estimation at appraisal. This is because of the overestimation of electricity consumption levels by households and higher household incomes assumed at the timing of peak inflation during 2008-2009.

Table A3-1: Results of Economic Analysis for Original Subprojects

Province	At Appraisal (PAD)		At Completion	
	EIRR (%)	NPV @10% ($ million)	EIRR (%)	NPV @10% ($ million)
Vinh Phuc	16.2	10.3	16.5	18.9
Ha Tinh	19.4	27.6	16.2	18.3
Ca Mau	13.2	6.9	19.8	5.2
Ben Tre (*)	14.1	1.7	n.a.	n.a.
Quang Ngai	14.2	9.7	13.6	14.0
Phu Yen	19.4	11.2	19.3	13.0
Whole project	**18.2**	**248.9**	**17.5**	**221.6**

Source: PAD, Borrower's ICR
Note: *: Withdrawn from project-Not available

[15] Meier.P, 2010. *Economic and Financial Analysis of T&D project*, Report to World Bank.

Table A3-2: Results of Economic Analysis for Additional Subprojects

Province	At Appraisal (PP)		At Completion	
	EIRR (%)	NPV @10% ($ million)	EIRR (%)	NPV @10% ($ million)
Binh Dinh	38.8	26.1	18.4	11.0
Dien Bien	40.7	5.5	16.7	2.5
Hung Yen	51.1	54.3	20.2	17.8
Lao Cai	14.8	2.5	13.1	2.8
Phu Tho	42.0	26.0	20.9	16.0
Thanh Hoa	34.3	31.0	19.7	21.7
Whole project	**n.a.**	**n.a.**	**20.9**	**439.9**

Source: PAD, Borrower's ICR

Note: *: Withdrawn from project-Not available

B) Financial Analysis

Methodology at Appraisal

A financial analysis of the subprojects in the original financing was undertaken by valuing incremental revenues and costs at the prevailing regulated tariffs in rural areas. The real tariff was assumed to remain constant throughout the forecast period while incorporating changes in the composition of total demand served. The estimated levels were VND 700 per kWh for residential use and VND 1,000 per kWh for production, commercial, and irrigation use. The following cost assumptions were made: (a) capital costs are baseline costs plus physical and price contingencies; (b) power purchase prices at the beginning point of 22/35 kV distribution system are estimated based on an average current purchase price of PCs in Vietnam in addition to estimated PCs' losses to the point; power purchase prices are assumed to remain constant throughout the forecast period; (c) operating and maintenance (O&M) costs for MV lines are estimated at 1 percent of investment costs and O&M costs for LV lines are estimated at 4-7 percent of sales revenues depending on the administrative level of LV management; (d) transmission and distribution losses are estimated at 1 percent for MV networks and about 5.6-6.0 percent for LV networks after project implementation; (e) foreign costs are converted to VND at the rate of 15,500 to the US dollar, assuming all investments will be implemented during the first year; (f) local inflation is estimated at 3 percent; and (g) income tax rate is assumed as 28 percent.

Methodology at project completion

The methodology is identical to that used at appraisal, except that: (a) actual costs at project completion are used; (b) a 20-year time horizon covering 2008 to 2028 and 2010 to 2030 is applied for original subprojects and additional subprojects, respectively; (c) the energy purchasing and selling costs are the average tariffs regulated by the GOV in 2010 (VND 718 per kWh and VND 1,058 per kWh) for original subprojects and 2012 (VND 1,037 per kWh and VND 1,369 per kWh) for additional subprojects; (d) the O&M costs for both MV lines and LV lines are estimated at 2 percent of investment costs; and (e) foreign costs are converted to USD at the rate of VND 19,500 for original subprojects and VND 20,500 for additional subprojects.

For the original subprojects under which the MV and LV parts are rehabilitated and expanded synchronously, the economic analysis was done at the provincial level, which means that all the project communes, for both MV and LV systems, in a given province, were analyzed together. The applied CAPEX ratio for these subprojects is 0.93. For the additional subprojects under which rehabilitation of the MV and LV parts are not conducted synchronously, the economic analysis was done for the LV system only and the CAPEX ratio of 2.0 was applied for this type of subprojects.

Results and discussion

Table A3-1 and A3-2 show the results of financial analysis for original and additional subprojects, respectively. The FIRR and NPV for the whole project at completion were **6.5 percent**, and **$567.9 million**, respectively. At the time of original appraisal, the subprojects were generally considered not to be financially viable because of the nature of rural electrification that per capita investment cost for distribution network tends to be high in remoter areas. However, the financial indicators at completion stage have been substantially improved because the energy consumption levels by households remarkably increased due to network expansion in the remote and deep-lying areas, and rapid growth of demand for productive uses. It is a fact that the indicators of additional subprojects at completion are better than that of the original subprojects because the network improvements were implemented in the higher populated areas, while the indicators have been slightly reduced in comparison to those at appraisal stage because successive reductions to the margins between the energy selling and buying prices negatively affected the viability of the LDUs. Financial sustainability of the LDUs is discussed in next session.

Table A3-3: Results of Financial Analysis for Original Subprojects

Province	At Appraisal (PAD)		At Completion	
	FIRR (%)	NPV @2.25% ($ million)	FIRR (%)	NPV @2.25% ($ million)
Vinh Phuc	3.9	-6.5	5.5	15.0
Ha Tinh	2.6	-11.9	4.6	11.0
Ca Mau	-0.1	-3.3	5.3	2.6
Ben Tre (*)	2.7	-6.4	n.a.	n.a.
Quang Ngai	0.7	-13.3	3.5	4.3
Phu Yen	1.8	-6.1	7.5	11.6
Whole project	**2.1**	**-47.5**	**5.6**	**184.8**

Note *: Withdrawn from project – not available

Table A3-4: Results of Financial Analysis for Additional Subprojects

Province	At Appraisal (PP)		At Completion	
	FIRR (%)	NPV @2.25% ($ million)	FIRR (%)	NPV @2.25% ($ million)
Binh Dinh	6.3	3.6	6.0	8.3
Dien Bien	10.5	1.0	4.3	1.3
Hung Yen	8.3	10.6	7.7	15.5
Lao Cai	2.3	0.1	2.4	0.2

Phu Tho	14.6	16.9	8.7	16.5
Thanh Hoa	8.1	11.1	8.2	22.3
Whole project	**n.a.**	**n.a.**	**7.6**	**383.1**

Source: PAD, Borrower's ICR
Note: *: Withdrawn from project-Not available

C) Financial analysis of the LDUs

One of the main objectives of the project is that after upgrading and rehabilitation of the LV networks in the various provinces, the existing ad hoc management of the LV system is to be converted into financially viable LDUs either as cooperatives under the Cooperative Law or joint stock companies under the Enterprise Law. In this section, financial analysis has been conducted to hypothetical LDUs using various assumptions.

Methodology and assumption

Analysis of the financial sustainability of the LDUs involves an analysis of the existing electricity market, the projected electricity sales as a result of the project, the tariff structure, the institutional arrangement to support the LDUs, and the projected financial performance of the LDUs. These are the main assumptions for the analysis:

a) *Customer Base*. The residential consumer is predominant in the rural network system. Residential consumers dominated the project areas on average 75 percent in terms of electricity sales, followed by commercial consumers by 15 percent and production consumers by 8 percent. Average consumption per household is assumed to be 922 kWh/annum (that is, approximately 80kWh/month).

b) *Electricity Sales Projection.* Electricity sales for LDUs in the project area are expected to increase from 3,213 GWh in 2012 to 6,500 GWh in 2022. This is based on increased new connections, increased unit household consumption and projected increases in production and commercial use.

c) *Tariff.* PM Decision No.21 in 2009 established the mechanism for the annual update of the average retail electricity tariff while ensuring the unbundling of four cost components (generation, transmission, distribution, and a component to cover system operation, regulatory costs and administrative costs). Along with this mechanism, the average retail electricity tariff increased by 8.92 percent to VND 948.5 per kWh in March, 2009. Also, PM Decision No. 21 introduced several key instructions: (i) a national uniform retail tariff applies both in urban and rural areas, except for off grid areas, with a transition period for its full implementation in LDUs, eliminating the ceiling price of VND 700 per kWh in rural areas from September 1, 2009; (ii) the residential tariff is designed as an incremental block tariff, where the first block is subsidized and pegged at about 30-40 percent of costs, to represent the lifeline block, and reduced to the first 50 kWh of consumption, compared with 100 kWh in the previous tariff design; (iii) LDUs are allowed to charge a margin of 25-30 percent over the purchase prices set out by PCs (previously, the margin was VND 390 per kWh plus value-added tax (VAT)) to cover their operating costs; and (iv) if the LDU is not financially sustainable or its management has insufficient capacity to operate, it is recommended that the rural LV networks are taken over by PCs.

Through the application of these mechanisms, the average electricity tariffs have increased steadily and have started to be revised more than once per year, as seen in Table A3-5[16]. Along with the update of retail tariff (that is, the LDU's selling price), the wholesale tariff at which the LDUs purchase from the PCs has been regularly revised.

Table A3-5: Average Electricity Tariff Approved

Date Approved	March 2009	March 2010	March 2011	December 2011	June 2012	December 2012	August 2013
VND/kWh	948.5	1,058	1,242	1,304	1,369	1,467	1,509
Cents/kWh	4.7	5.3	6.2	6.5	6.8	7.3	7.6
Increase	-	11.5%	17.4%	5.0%	5.0%	5.0%	5.0%

Source: World Bank based on decisions and circulars of the government

Results and Discussion

Table A3-6 shows that the calculated margin for the LDUs as the difference between buying and selling price has been reduced for lower consumption blocks. This indicates that there will be increased financial uncertainty for the LDUs whose customers are mostly residential customers with lower electricity consumption.

Table A3-6: Margin left for LDU (VND/kWh)

Block(kWh)	before 2009	2009	2010	2011	2012
0-50	304	198	185	184	186
0-100	n.a.	n.a.	n.a.	261	270
51-100	304	286	276	261	270
101-150	304	374	360	316	335
151-200	304	412.5	403	372	424
201-300	304	445.5	435	404	449
301-400	304	478.5	466	435	481
>400	304	489.5	478	447	482

Source: World Bank staff based on decisions and circulars of the government

Table A3-7 shows several financial indicators that are projected for LDUs by size. Even if assuming the distribution loss of 7-8 percent[17] (i.e., the distribution network is well maintained without deteriorations throughout the projection period), the calculated

[16] The current tariff revenues still do not reflect all cost items, such as foreign exchange losses and financing costs. In addition, while nominal average electricity tariffs have increased by 44 percent over the period 2010-2012, cumulative inflation over the same period amounted to 53 percent. Hence, further real term increases in tariffs will be required to allow for full cost recovery and create an environment that would attract private investors.

[17] With the rehabilitation of the LV systems, including meters, average losses have reduced to 8-10 percent and some communes even reduced to 7 percent from the pre-project loss of 30-40%. Due to geographical factors such as mountainous regions, remote areas and low population density, and lack of new investments to rehabilitate and maintain the networks, these networks will be degraded and the system loss will increase over time if there is no appropriate maintenance. Since the uniform nationwide tariff is applied in accordance with PM Decision No.21, no surcharge fee to cover high network losses is permitted. Most of the LDUs therefore cannot mobilize enough funds for network maintenance and expansion as required.

indicators suggest small and medium sized LDUs cannot be financially sustainable as the network degrades and natural calamities happen over the time. Given the size of existing LDUs of the whole project, 75 percent of LDUs in the plain areas and all (100%) LDUs in mountainous areas would need to transfer their network to PCs.

Table A3-7: Estimated Operational and Financial Indicators of LDUs by size

Size of LDU	Small LDUs (<1,500 customers)	Medium LDUs (1,500–2,500 customers)	Large LDUs (>2,500 customers)
Energy sales in 2012 (in GWh)	0.83	1.64	2.05
Average sales growth 2012-2022	10%	10%	10%
Total investment cost (in VND)	4,000	6,000	7,000
Investment cost per kWh (in VND)	4.8	3.4	3.2
Number of household connected per LV network (km)	57	68	84
Operating costs per revenue	13%	8%	6%
FIRR of investment	-1.3%	1.8%	4.1%
NPV	-0.1	-0.016	0.09

D) Brief Perspectives for PC's Financial Sustainability

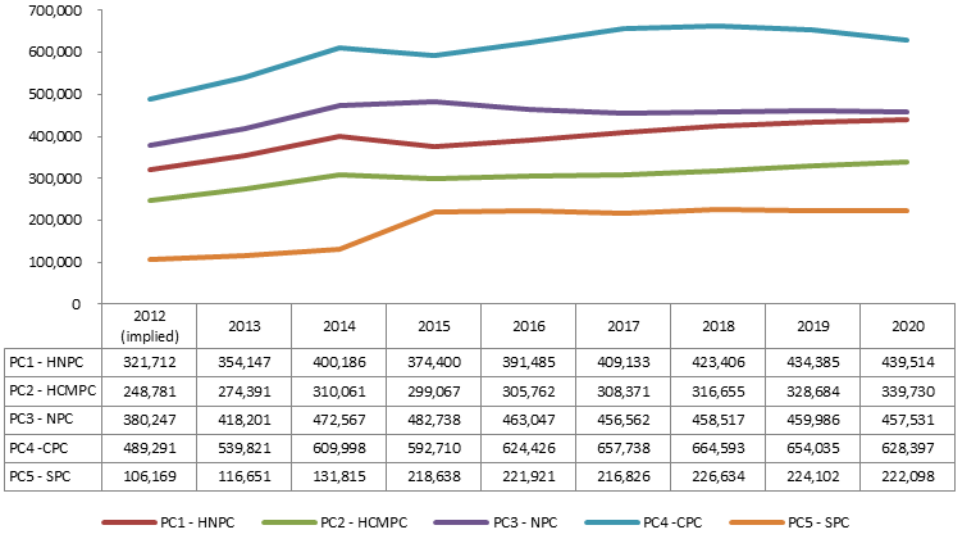
In the project, a substantial percentage of the invested LV networks have been transferred from the LDUs to the PCs, in accordance with the PM Decision No. 21 encouraging such a transfer when LDUs are not financially viable. This means that the sustainability of the achieved development objectives is increasingly dependent on the financial sustainability of the PCs.

There are some indications showing financial performance of the PCs. One of the findings of the Bank's ongoing study on strategic options for financial recovery of the power sector is that all the PCs generated positive net cash flow from their operations between 2008 and 2012 (cash receipts from electricity sales covered all operating and maintenance expenditures). In terms of debt, the PCs are more balanced between debt and equity than for the other EVN subsidiaries, partly due to their relatively less capital intensive structure.

However, these observations do not imply lack of concern about potential financial difficulties. First, investments in distribution networks executed by PCs based on Power Development Master Plan No. 7 are huge, totaling VND 446,354 billion (approximately $23.4 billion) during 2011-2013. Second, and more importantly, the PC's financial performance is strongly affected by not only the retail tariff but also the mechanism for setting the bulk supply tariff, which is the price paid by the companies for electricity purchased to the single buyer to supply their customers.

According the 'Strategic options for financial recovery of power sector', the economic distribution tariff, to be calculated as the retail tariff less the bulk supply tariff, needs to be increased over time to meet the demand while complying with various financial covenants. The required tariff level differs from PC to PC, but it can be stated in general that the distribution tariff will have to increase by at least 35 percent during 2012-2020.

Figure A3-1: PC's economic distribution tariff simulation (VND/MWh)



	2012 (implied)	2013	2014	2015	2016	2017	2018	2019	2020
PC1 - HNPC	321,712	354,147	400,186	374,400	391,485	409,133	423,406	434,385	439,514
PC2 - HCMPC	248,781	274,391	310,061	299,067	305,762	308,371	316,655	328,684	339,730
PC3 - NPC	380,247	418,201	472,567	482,738	463,047	456,562	458,517	459,986	457,531
PC4 -CPC	489,291	539,821	609,998	592,710	624,426	657,738	664,593	654,035	628,397
PC5 - SPC	106,169	116,651	131,815	218,638	221,921	216,826	226,634	224,102	222,098

Source: World Bank based on EVN data

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility
Lending			
Hung Tien Van	Senior Energy Specialist	EASEG	Task Team Leader
Robert Taylor	Lead Energy Specialist	EASEG	Sector Coordinator
Richard Spencer	Senior Energy Specialist	EASEG	Sector Coordinator
Hoi-Chan Nguyen	Senior Legal Counsel	LEGEA	Sr. Counsel
Anil Malhotra	Senior Adviser		Consultant
Mariko Ogawa	Financial Analyst	EASEG	Financial
Hung Viet Le	Financial Specialist	EAPFM	Financial Management
Phuong Thi Thanh Tran	Environment Specialist	EASVS	Environmental issues
Hong Vu	Resettlement Specialist	EASVS	Resettlement
Quang Ngoc Bui	Social Specialist	EASVS	Social issues
Thang Chien Nguyen	Procurement Officer	EAPPR	Procurement
Rebecca Sekse	Senior Financial Analyst	EASEG	Financial management
Teri Velilla	Program Assistant	EASEG	Project support
Lien Thi Bich Nguyen	Program Assistant	EACVF	Project support
Supervision/ICR			
Hung Tien Van	Senior Energy Specialist	GEEDR	Task Team Leader
Daisuke Miura	Energy Specialist	GEEDR	ICR Leader
Cam Thi Kim Nguyen	Project Officer	GEEDR	Operations
Defne Gencer	Senior Energy Specialist	GEEDR	Co-Task Team Leader
Tran Tan Hung	Power Engineer	GEEDR	Procurement
Son Van Nguyen	Senior Environmental Specialist	GENDR	Environmental issues
Nghi Quy Nguyen	Social Specialist	GSURR	Social issues
Hanh Thi Huu Nguyen	Financial Management Specialist	GGODR	Financial management
Franz Gerner	Lead Energy Specialist/ Energy Sector Coordinator	GEEDR	Sector Coordinator
Huong Thu Vu	Program Assistant	EACVF	Project support
Cung Van Pham	Sr Financial Management Specialist	EASFM	Financial management
Hoi-Chan Nguyen	Senior Counsel	LEGES	Sr. Counsel
Ky Hong Tran	Energy Specialist	EASVS	Operation
Lien Thi Bich Nguyen	Program Assistant	EACVF	Project support
Mai Thi Phuong Tran	Financial Management Specialist	EASFM	Financial management
Nguyen Chien Thang	Senior Procurement Specialist	EASRP-HIS	Procurement
Quang Ngoc Bui	Operations Officer	EASVS	Social issues
Richard Jeremy Spencer	Country Sector Coordinator	SASDE	Sector Coordinator
Robert P. Taylor	Consultant	EASCS	Sector Coordinator
Son Duy Nguyen	Senior Operations Officer	EACVF	Portfolio management

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY02		0.42
FY03	30.17	54.96
FY04	55.74	182.68
FY05	27.03	101.81
Total:	**112.94**	**339.45**
Supervision/ICR		
FY05	7.49	13.27
FY06	21.02	67.87
FY07	29.72	63.47
FY08	41.95	84.19
FY09	39.20	62.45
FY10	51.06	90.82
FY11	38.63	77.76
FY12	27.63	73.11
FY13	33.55	82.56
FY14	33.60	112.85
FY15	7.45	21.29
Total:	**331.30**	**749.64**

Annex 5. Beneficiary Survey Results *(if any)*

Not applicable.

Annex 6. Stakeholder Workshop Report and Results *(if any)*

Not applicable.

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

On June 30, 2014, the closing date of the project, all of the 29 PMUs, including 25 provincial PMUs, 3 PCs' PMUs, and the PMB of the MOIT, submitted their ICRs separately for the original and AF credits. All the ICRs are presented in a structure/template issued by the Bank to ensure inclusion of all required information. To avoid repetition of similar contents in the ICRs, this section will not present the ICR's contents by each implementing agency but will summarize (a) overall assessment, (b) findings on the infrastructure component, (c) findings on the TA component, and (d) future recommendation.

A. Overall Assessment

The project has achieved all objectives set forth in the project design, ensured the success of the Vietnam Rural Electrification Program for the period 2000–2010, and contributed to fulfill the national target of 'almost all rural households being electrified by 2020'[18] and the socioeconomic development master plans of the project provinces.

The implementation of the RE2 project has become an exemplary model for coordination among local authorities and the power sector for similar projects. The project contributed in helping the government complete the last miles of rural electrification through an extensive survey on the current situation and assessment on the needs of rehabilitation, upgrading, and expansion of rural networks by 2020. The project contributed to legalization of and provision of capacity building to the LDUs and improved management of power distribution in rural areas by a series of training programs to thousands of LDU and PC staff.

B. Infrastructure Component

Benefits of the Project

- Providing electricity access to a large number of geographically disadvantageous communes. Huge investment requirement in these types of communes imposed a burden on the state's budget. Neither the local authorities nor the PCs can afford this investment. The Bank's financing is a great resource for them to realize the development goals of each province.
- Improving reliability of electricity with stabilized voltage supply and reduced interruptions. Before the project, rural households frequently suffered because of poor power supply. In most project communes, electricity was only usable between midnight and early morning because of low voltage. Electric cookers, the most useful kitchen appliance, could not be used. There was a popular saying about this situation: '*dinner lit by oil lamp, sleep lit by electricity'.*
- Meeting the fast-growing demand in rural areas for productive uses (for example, small and medium-sized industries, aquaculture, handicraft, water pumps, and agricultural activities) and improving various aspects of domestic life in project communes (for example, economy, education, entertainment, and health care). Before the project, the quality of electricity supply was so poor that people could

[18] Vietnam's National Energy Development Strategy up to 2020 with vision 2050.

not use it for their domestic needs, leave alone for other purposes. With the improved grids and increased substations' capacity, the network meets the demand for socioeconomic development of the project provinces in the period 2010–2020.

- Increasing safety for users. A large number of the grids were poorly designed and constructed with substandard materials. In addition, there were often no funds for rehabilitation or in some cases, even for routine operations and management. This led to unsafe conditions for network operators and electricity users. It is reported that hundreds of people died every year because of electric shocks. The improved network therefore helped increase safety and reduce the number of deaths.
- Reducing technical losses. The rehabilitated systems have significantly reduced losses from 30–40 percent to 10–12 percent, on average, and in some communes to 7 percent.
- Improving profitability of the LDUs. Because of the reduced losses and improved capacity provided by the project, almost all the LDUs have become profitable. The financially weak LDUs that could not survive because of increasingly low margins have been transferred to the PCs.
- Reducing retail tariff. Before the project, the cost of electricity varied considerably across communes. Overall, rural consumers paid much higher tariffs than their urban counterparts, with tariffs roughly two to three times the nationally prescribed residential tariffs. Rural households even had to pay additional amounts for fixing problems in the network. After the project, the tariff has become more affordable because of reduced losses. Since 2009, a uniform national tariff has been compulsorily applied and no charges are imposed on users for repairing and maintaining the systems.
- Contributing to early fulfillment of the National Target Program on New Rural Development aimed at providing key infrastructure for rural development, of which electricity is one of the key factors.
- Providing capacity building for the PMU staff of 29 IAs through strict requirements for high responsiveness to a large number of project issues and daily interactions with Bank staff.

Implementation Issues

- The project was designed to be implemented in parallel by the PCs and provinces for MV and LV components, respectively. The project can only achieve efficiency when the two components are implemented and completed at the same time. In many localities, the implementation progress of the two components was synchronous, while it was asynchronous in others because of reasons such as poor coordination between two IAs, delay in construction in one of the two components due to rebidding of contract packages, financially weak contractors, and difficulty in land acquisition. Through a series of enhanced implementation support missions and progress review meetings, the Bank team and the MoIT tried to remove obstacles that caused asynchronous progress between the two components.

- Land acquisition, particularly for the components implemented by the PCs, is difficult in some provinces. Land acquisition in the distribution projects is normally marginal but the project still faced some difficulties. For the LV component implemented by the provinces, the issue was solved more easily because the provinces can exert power over the lower levels, namely, the district and commune levels. For the MV component implemented by the PCs, the issue became harder because compensation and acquisition was still required to be made through an intermediate agency, the district's compensation council, and the PCs had to request for coordination from the PPC.
- The project was mostly implemented during the 2007–2008 global economic crisis. Inflation was so high that many contractors, especially financially weak contractors, could not continue the fixed-price contracts which had largely been applied in this stage. A large number of contracts were terminated and rebids were required. This caused serious delays to some packages and cost overruns to the project. The AF was partly designed to bridge this financing gap.
- The Bank's safeguard policies and guidelines are quite complicated to follow. Normally, rural electrification projects are simple in terms of social and environmental impacts. Initially, preparation of safeguard documents, hiring of independent monitoring consultants, and procurement of ICB contract packages in accordance with the Bank's instructions and procedures were difficult for the provincial PMUs since they were new to Official Development Assistance (ODA)-financed projects. The Bank and MoIT provided training and the problems have been gradually solved.
- All provincial PMUs were new to IDA-financed projects. The RE2 was their first project. The PMUs were established with core staff from the Provincial Department of Industry and Trade. They were neither experienced in project management nor knowledgeable enough on the subject. During project implementation, the MoIT, as coordinator of the project, conducted numerous intensive training sessions on project management. With on-the-job training by the Bank, the capacity of the PMUs' staff improved and met the donor's requirements.
- The project was implemented over a long period. During that time, there were several changes to the government's policy, provincial power development master plans, and land use planning. Design and cost estimation of subprojects therefore required several revisions and it took time to get approval from a competent agency. This, in turn, contributed to prolonged project implementation.
- Arrangement of counterpart funds was not sufficient in a number of provinces. Although commitment for counterpart funds was one of the selection criteria for project participation, project provinces were mostly the poor ones whose expenditures mainly depended on the state's budget. This was a major difficulty for a number of IAs.
- At least half the communes were located in geographically disadvantageous areas, which caused difficulty for construction. Although the PMUs and communities made considerable efforts to help contractors, the construction in these areas was still delayed.

Assessment of Bank's and Borrower's Performance

- The project consisted of a large number of subprojects scattered across large areas and implemented in different phases. In addition, the project was required to be implemented synchronously by both the provinces and PCs. It therefore required close coordination among various agencies. The IAs made a great effort to successfully complete the project.
- Except for three PCs and the MoIT/PMB which had implemented several Bank-financed projects and were acquainted with the Bank's guidelines and procedures, this type of project was completely new to the 25 provincial PMUs. The Bank's team closely coordinated with and supported the IAs during project design and implementation. The capacity of the IAs' PMUs has improved through a series of training sessions and daily interaction with the Bank's team.
- The Bank team is very experienced in anticipating and solving issues raised during project implementation. Their quick response to the borrower's queries and requests significantly contributed to successful implementation of the project.

Lessons Learned

In the preparation period

- There should be a clear definition of the roles of each party involved through wide consultation with all related government organizations, from the central to local levels; the implementing agencies; and the local communities.
- System designs should be strictly monitored and reviewed to avoid changes at sites.
- Rural energy projects should be phased and medium-sized. A province-level project should comprise of not more 20–30 communes in a phase because distribution projects typically spread across a wide geographical area and involve tens of thousands of households.
- Good dissemination of information among stakeholders is crucial to get local authorities to coordinate and to get the community's consensus and support for the project.
- Issues that might appear during project implementation should be anticipated as early as possible, ideally during project design, by taking into account all the related regulations of the government and guidelines of the Bank to prepare countermeasures.
- Organization and capacity of the IAs should be carefully assessed. The PMUs must be equipped with full-time qualified staff. The PMUs themselves should have specialized and professional units in project management.
- The entities that receive and manage the system should be involved from the project design stage to facilitate the handover of works upon completion.
- A clean site should be prepared as soon as possible to enable contractors to start their work as scheduled.

In the implementation period

- Land acquisition needs close coordination with and early involvement of the local authority.
- Close coordination between the MV and LV components is required to synchronize implementation progress.
- Implementation of the project should be as quick as possible to avoid the risk of cost overrun due to inflation, change of policies and regulations, and change of land use planning.
- Price-adjustment contract should be applied for all goods and works contracts to avoid termination of the contract by contractors due to price escalation.
- The state's regulations and the donor's guidelines should be strictly complied with from the beginning of the project because fixing problems related to non-compliance (if any) is time-consuming.
- Selection of qualified contractors is one of the key criteria for ensuring timely implementation and quality construction.
- Close community supervision during construction and reservation of budget for this task is required.
- Reporting mechanism should be strictly followed to keep related agencies informed about implementation-related issues and request for their cooperation and solution (if required) in a timely manner.
- Technical assistance should be carried out ahead of time to prepare resources for the LDUs before receiving the assets.
- When there are indications that the contractors are not capable of continuing their contracts after several efforts to facilitate their works, prompt termination of contracts and rebidding is required.

C. Technical Assistance Component

Assessment of Bank's and Borrower's Performance

Borrower's performance

- Because a number of regulations in Vietnam are complex and inconsistent with the Bank's regulations, there were some difficulties at the beginning of the implementation process. However, there was significant improvement in the implementation of the AF of the RE2 project.
- Because the training courses were conducted simultaneously and in a short time, the EVN units had difficulties in scheduling work and sending their staff for these training courses.
- There were difficulties in collecting data for the survey and assessment on rural electrification to propose policy and mechanism recommendations for rural electrification up to 2020. Because the implementation time was limited and implementation locations were spread across the country, along with difficulties in coordination between the consultants, the local units, and power companies, it was quite difficult for the consultants to collect data on rural electrification.

Bank's performance

- During the RE2 project preparation and implementation, the Bank provided whole-hearted guidance in all procedures and conditions of the project agreement. The Bank, in collaboration with the MoIT, conducted training courses in capacity building for project managers. The PMB effectively performed project disbursement in accordance with the Bank's regulations. Submission of the monthly and quarterly reports (via email) was convenient for reporting, monitoring the implementation and disbursement progress, and immediately addressing the problems arising in the implementation process.
- The MoIT has always received the attention of the Bank and always supported the PMB in project preparation, implementation, and completion. During the project implementation process, the PMB actively reported difficulties and issues to the Bank, who quickly recommended solutions in accordance with the laws and rules of Vietnam and the Bank.

Lessons Learned

- The selection process for consultants and goods and equipment providers should be implemented according to prevailing regulations and with transparency. The consultants and providers must have enough human resources and sufficient financial capacity and experience to meet the requirements of the developers and ensure quick and effective project implementation with ensured quality.
- PMU for an ODA project is typically established when a project starts and dissolved when project closes. Because of a large workload required to be done in a short implementation period, this category of agency should be equipped with qualified and experienced staff who have in-depth knowledge of the State's regulations on ODA management and donor's policy and guidelines.
- Make reasonable allocation of funds for activities to use the loans effectively and bring high benefits for the work.

D. Future Recommendations

- The GOV approved the overall program of power supply for unelectrified rural households from the national grid and renewable energy sources in the period 2014–2020 with the investment capital needs of VND 30,000 billion equivalent to $1.5 billion.[19] The MoIT could request the Bank to consider providing IDA funds for Vietnam to implement the program, which includes (a) project coordination, supervision, management, and investment; (b) human resource training; (c) capacity building of management; (d) consulting services to assist state management and project management; (e) developing policies and mechanisms, investment strategies and operational management of rural electricity network; and (f) propagate to save energy, use electricity efficiently, safely and protect environment.

[19] Power supply for rural, mountainous areas and islands by 2020 approved by PM Decision No. 2081 /QD-TTg dated November 8, 2013.

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Date: December 18, 2014

To: **Mr. Van Tien Hung**
Senior Energy Specialist
Task Team Leader
Energy & Extractives Global Practice
East Asia and Pacific Region

Re: **The Second Rural Energy Project (Cr. 4000-VN & Cr. 4576-VN) - Implementation Completion Results (ICR) Report**

Dear Mr. Hung,

First of all, we, one of the key government Implementation Agencies of Second Rural Energy Project, would like to express our thanks to your supports during the Project's implementation.

We have reviewed the Bank's draft ICR for RE2 project and found that the report was good with a comprehensive assessment of the project achievements, implementation issues, lessons learned, etc. We, therefore, would like to inform you that we do not have any comments on the Bank's draft ICR report.

Sincerely Yours,

Nguyen Tan Loc
Vice President
Vietnam Electricity.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

Not applicable.

Annex 9. List of Supporting Documents

All documents are filed in IRIS, WBDocs, and the Project Portal, such as aide memoires, reports, and email correspondences.

World Bank. 2002. Vietnam - Country Assistance Strategy. Washington, DC: World Bank.

ASTAE. 2011. *State and People, Central and Local, Working Together: The Vietnam Rural Electrification Experience.* The World Bank Asia Sustainable and Alternative Energy Program (ASTAE). Washington, DC: The World Bank.

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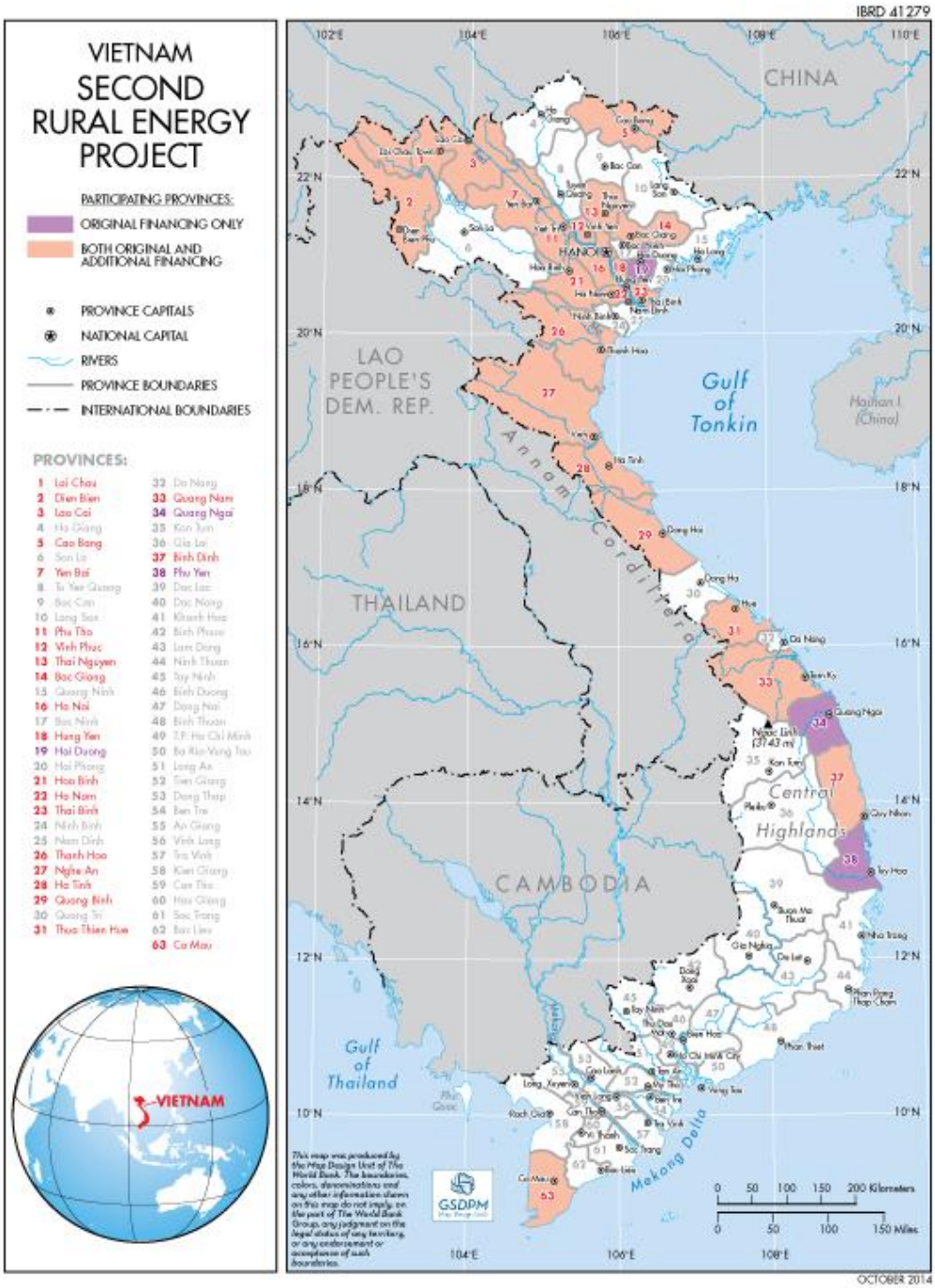
IBRD 41279
VIETNAM
SECOND RURAL ENERGY PROJECT
PARTICIPATING PROVINCES:
ORIGINAL FINANCING ONLY
BOTH ORIGINAL AND ADDITIONAL FINANCING
PROVINCE CAPITALS
NATIONAL CAPITAL
RIVERS
PROVINCE BOUNDARIES
INTERNATIONAL BOUNDARIES
PROVINCES:
1 Lai Chau
2 Dien Bien
3 Lao Cai
4 Ha Giang
5 Cao Bang
6 Son La
7 Yen Bai
8 Tu Yen Quang
9 Bac Can
10 Lang Son
11 Phu Tho
12 Vinh Phuc
13 Thai Nguyen
14 Bac Giang
15 Quang Ninh
16 Ha Noi
17 Bac Ninh
18 Hung Yen
19 Hai Duong
20 Hai Phong
21 Hoa Binh
22 Ha Nam
23 Thai Binh
24 Ninh Binh
25 Nam Dinh
26 Thanh Hoa
27 Nghe An
28 Ha Tinh
29 Quang Binh
30 Quang Tri
31 Thua Thien Hue
32 Da Nang
33 Quang Nam
34 Quang Ngai
35 Kon Tum
36 Gia Lai
37 Binh Dinh
38 Phu Yen
39 Dac Lac
40 Dac Nong
41 Khanh Hoa
42 Binh Phuoc
43 Lam Dong
44 Ninh Thuan
45 Tay Ninh
46 Binh Duong
47 Dong Nai
48 Binh Thuan
49 T.P. Ho Chi Minh
50 Ba Ria-Vung Tau
51 Long An
52 Tien Giang
53 Dong Thap
54 Ben Tre
55 An Giang
56 Vinh Long
57 Tra Vinh
58 Kien Giang
59 Can Tho
60 Hau Giang
61 Soc Trang
62 Bac Lieu
63 Ca Mau
VIETNAM
CHINA
LAO PEOPLE'S DEM. REP.
THAILAND
CAMBODIA
HANOI
Gulf of Tonkin
Hainan I. (China)
Annam Cordillera
Central Highlands
Gulf of Thailand
Mekong Delta
Ngoc Linh (3,143 m)
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108°E
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OCTOBER 2014