JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

NATIONAL ELECTRIFICATION ADMINISTRATION (NEA)
THE REPUBLIC OF THE PHILIPPINES

Feasibility Study on the Transfer of Facilities and Management of the 69 kV Transmission Lines and Systems from the National Power Corporation (NPC) to the Private Distribution Utilities in the Republic of the Philippnes

Final Report

March, 1998

TOKYO ELECTRIC POWER SERVICES CO., LTD.

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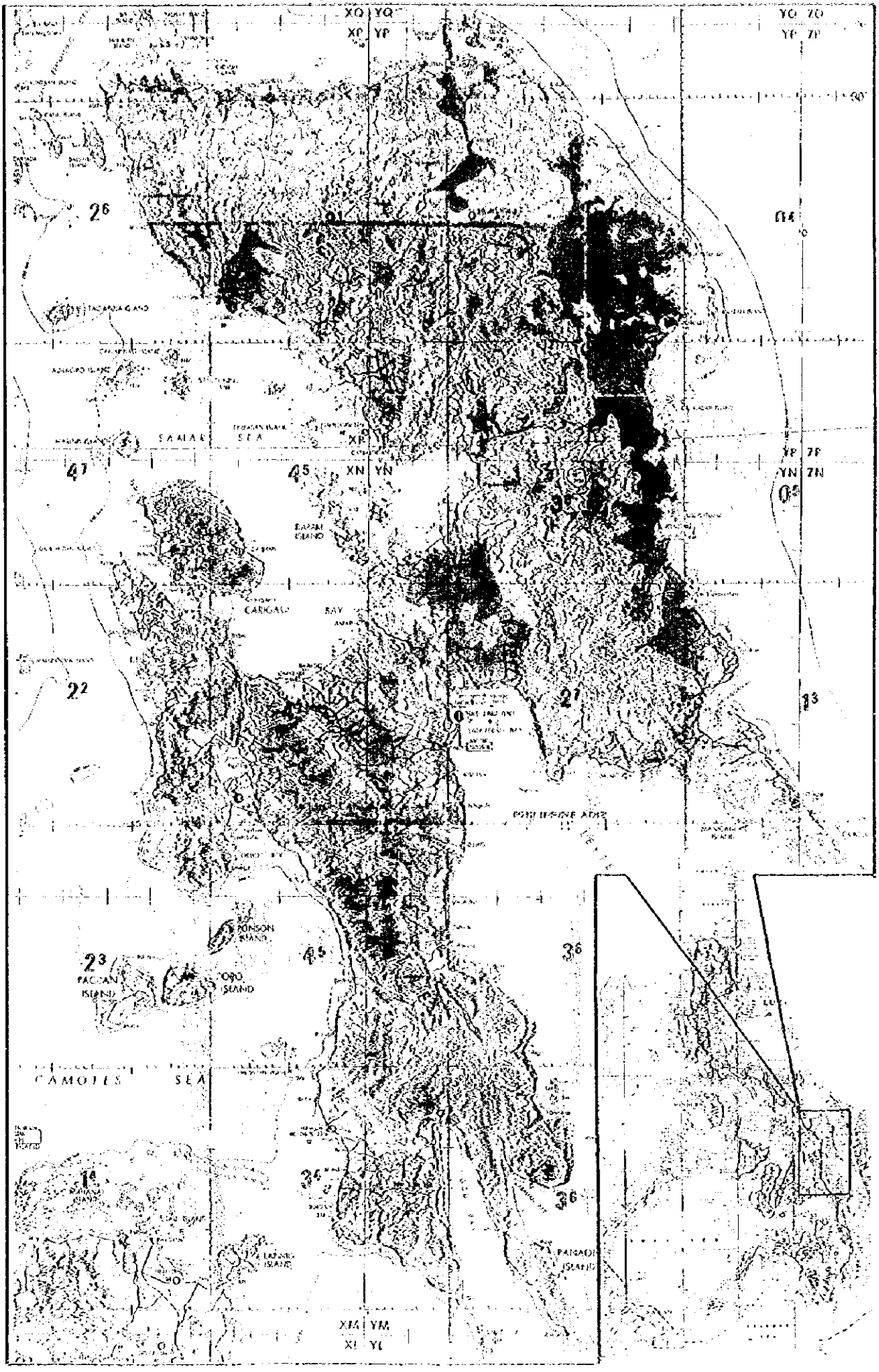
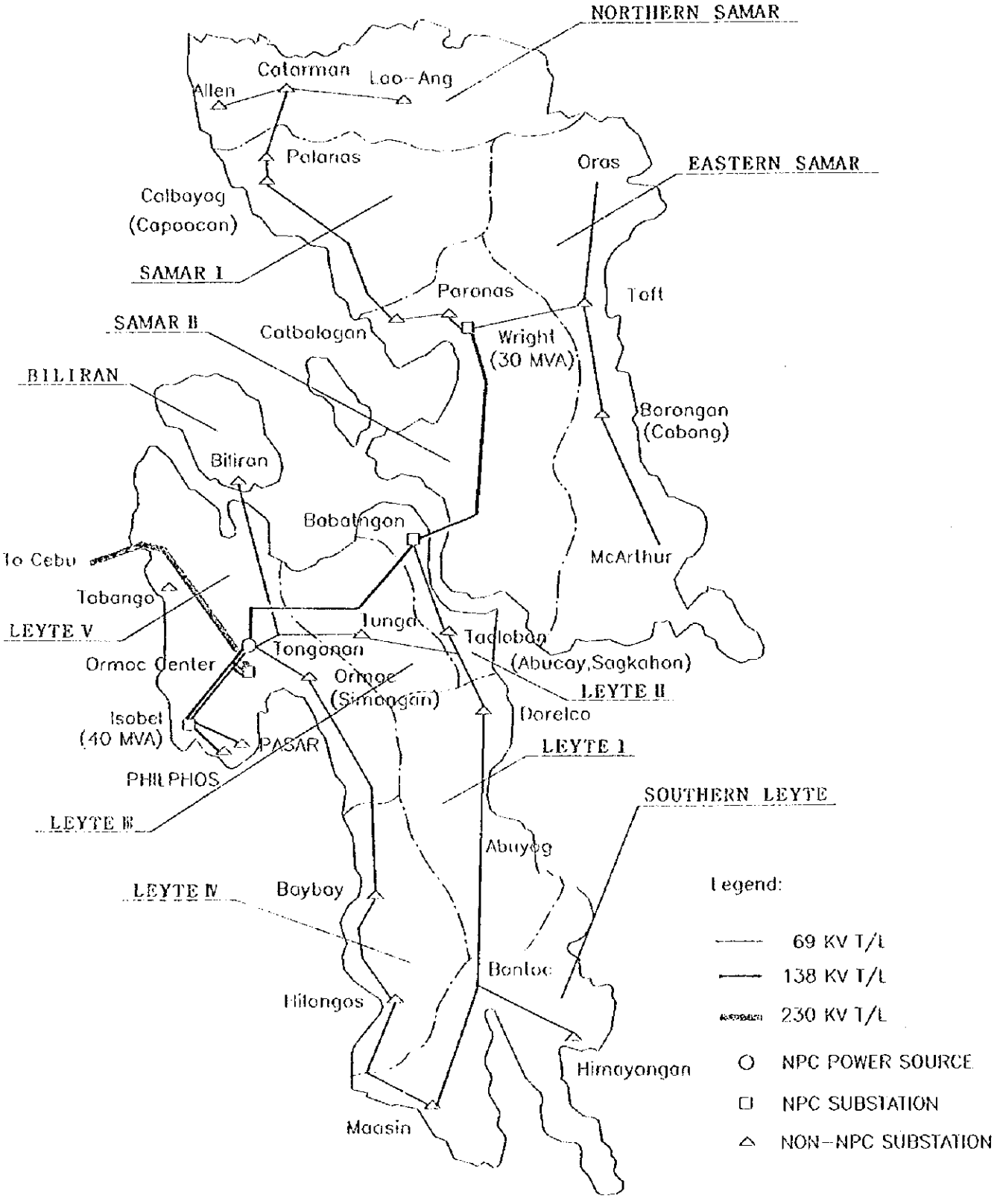
Location Map in Leyte and Samar Islands



Transmission System in Leyte and Samar Islands



PREFACE

In response to a request from the Government of the Republic of the Philippines, the Government of Japan decided to conduct the Feasibility Study on the transfer of facilities and management of the 69 kV transmission lines and systems from the National Power Corporation (NPC) to the private distribution utilities in the Republic of the Philippines and entrusted the study to Japan International Cooperation Agency (JICA).

JICA sent a study team, led by Mr. Takahisa Murata of Tokyo Electric Power Services Co., Ltd. (TEPSCO) to the Republic of the Philippines four times from December 1996 to March 1998.

The team held discussions with the officials concerned of the Government of the Republic of the Philippines and conducted related field surveys. After returning to Japan, the team conducted further studies and compiled the final results in this report.

I hope this report will contribute to the promotion of the plan and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Republic of the Philippines for their close cooperation throughout the study.

March 1998

Kimio FUJITA
President
Japan International Cooperation Agency

March 1998

Mr. Kimio FUJITA
President
Japan International Cooperation Agency
Tokyo, Japan

Dear Mr. FUJITA,

Letter of Transmittal

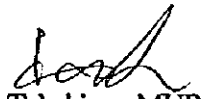
We are pleased to submit you the report of the Feasibility Study on the Transfer of Facilities and Management of the 69kV Transmission Lines and Systems from the National Power Corporation (NPC) to the Private Distribution Utilities in the Republic of the Philippines. The report contains the advice and suggestions of the authorities concerned of the Government of Japan and your Agency as well as the formation of above mentioned study. Also included are comments made by the National Electrification Administration and eleven (11) Electric Cooperatives in Leyte and Samar in the Republic of the Philippines during discussions on the draft report which were held in Manila and Tacloban.

This report presents a best option and a execution plan of the transfer of 69 kV transmission lines and systems from NPC to the private distribution utilities in Leyte and Samar in the Republic of the Philippines. We trust that realization of the study will much contribute to reform the power industry in order to improve the industry's efficiency and productivity.

In view of the urgency to introduce the competitive mechanism and to increase management efficiency, and of the need for socio-economic development of the Philippines as a whole, we recommend that the Government of the Republic of the Philippines implement this study as a top priority.

We wish to take this opportunity to express our sincere gratitude to your Agency, the Ministry of Foreign Affairs, and Ministry of International Trade and Industry. We also wish to express our deep gratitude to the National Electrification Administration and other organizations concerned of the Republic of the Philippines for the close cooperation and assistance extended to us during our investigations and study.

Very truly yours,



Takahisa MURATA
Team Leader
The Feasibility Study on the Transfer of Facilities and Management of the 69kv Transmission Lines and Systems from the National Power Corporation to the Private Distribution Utilities in the Republic of the Philippines

ACRONYMS / ABBREVIATIONS

ABS	Air Breaker Switch
AC	Alternating Current
ACS	Area Control System
ADB	Asian Development Bank
ANESTA	Agency for Non-Convention Energy Systems Technology Application
BOO	Build, Own and Operate
BOT	Build, Operate and Transfer
BU	Big Utilities
CB	Circuit Breaker
CBA	Collection Bargaining agreement
CDA	Cooperative Development Authority
CIDA	Canadian International Development Agency
CNPLS	Cebu-Negros-Panay-Leyte-Samar
DC	Direct Current
D/L	Distribution Line
DENR	Department of Environment and Natural Resources
DOE	Department of Energy
EC(s)	Electric Cooperative(s)
ERA	Energy Regulatory Authority
ERB	Energy Regulatory Board
ERC	Energy Regulatory Commission
EVTELCO	Eastern Visayas Telephone Company
FOREX	Foreign Exchange Rate Adjustment Clauses
FPCA	Fuel and Purchased Power Cost Adjustment Clause
GM	general Manager
GOCC	Government-owned and Controlled Corporation
GPS	Geothermal Power Station
GWh	Giga-watt hour
IPO	Initial Public producer
IPP	Independent Power Producer
JICA	Japan International Cooperation Agency
kV	Kilovolt
kVar	Kilo-volt-ampere
kW	Kilowatt
kWh	Kilowatt hour
MERALCO	Manila Electric Company
MVA	Mega Voltage-Ampere
MW	Megawatt
MWh	Megawatt hour
NEA	National Electrification Administration
NEDA	National Economic and Development Authority
NPC/NAPOCOR	National Power Corporation
NRI	Nomura Research Institute, Ltd.
NTC	National Transmission Company
NU	Non-utilities
O&M	Operation and Maintenance

OECF	Overseas Economic Cooperation Fund
OJT	On the Job Training
OU	Other Utilities
PEZA	Philippine Economic Zone Authority
PD	Presidential Degree
PF	Power Factor
PHILPHOS	Philippine Phosphate Fertilizer, Inc.
PHIVIDEC	Philippine Veterans Investment Development Company
PL	Profit and Loss
PNOC	Philippine National Oil Company
PPA	Power Purchase Agreement
PSS/E	Power System Simulator for Engineering
PTI	Power Technologies, Inc.
PVD	Primary Voltage Discount
RCC	Regional Control Center
ROW	Right-Of-Way
S/S	Substation
SOD	System Operation Department
SPUG	Strategic Power Utilities Group
SU	Small Utilities
T/L	Transmission Line
TEPSCO	Tokyo Electric Power Services Co., Ltd.
USAID	United States Agency for International Development
VAT	Value-Added Tax
VECO	Visayan Electric Company
VHF	Very High Frequency
VRC	Visayas Regional Center
WB	World Bank

CONTENTS

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CHAPTER 1

INTRODUCTION

Chapter 1: INTRODUCTION

1.1 Background

The Philippines is currently formulating a program of privatization for the purpose of introducing the competitive mechanism and increasing management efficiency by utilizing private energies.

As a part of this program, it is aiming for passage of the bill for the Omnibus Electric Power Industry Act of 1997, which is currently under deliberation in the national assembly and concerns deregulation and restructuring of the industry.

The passage of the bill would result in reform, and review of the authority, of the National Power Corporation (NPC), National Electrification Administration (NEA), and other agencies as well as the start of reorganization of the industry, including consolidation of the electrification cooperatives (ECs).

In addition, the government of the Philippines has positioned the induction of foreign capital through independent power producers (IPPs) as a key pillar of policy on power source development. This is in response to the shortage of funds needed for expansion of supply facilities to keep abreast of the demand, which is growing at the rapid rate of about 10 percent annually.

Amid this activity, the NPC is planning to transfer the operation and management of 69-kV transmission lines, substations, and related facilities which it owns to the regional ECs. These ECs are in charge of maintaining and operating the related distribution facilities.

In this connection, the NEA asked the Japanese government in April 1995 through the Philippines government to conduct a feasibility study for the preparation of suitable plans for such transfer in the Eastern Visayas region (consisting of Leyte and Samar), in order to increase supply efficiency. In response, the Japan International Cooperation Agency carried out a study for project selection and confirmation in October 1995. Through the accompanying field study and consultation with concerned institutions, the study team confirmed the scope of the study and reached a consensus on the same with the Philippine side.

As a result, JICA confirmed the worth of the prospective study, and consequently implemented the preliminary study in February 1996 and the preparatory study in July of the same year. On 29 July 1996, the JICA preparatory study team and the NEA reached an agreement on the scope of work (SW) and minutes of the meeting (MM) on a study on the transfer of facilities and management of the 69 kV transmission lines and systems from the NPC to the private distribution utilities in the republic of the Philippines.

In accordance with this agreement, the Japanese government determined the implementation

of the study for the plan and commissioned the same to JICA.

1.2 Contents

1.2.1 Objective

It is the objective of this study to examine the feasibility of transfer of jurisdiction of 69 kV transmission line (T/L) facilities currently owned by the NPC to private distribution companies, and related measures to put the operation on commercial footing.

1.2.2 Scope

(1) The study covers the 11 rural ECs in Region VIII on Leyte and Samar islands.

(2) The study target year is 2005.

1.2.3 Items of Investigation

The study was conducted in two phases, as follows.

(1) Phase 1: Review of available data and information, and analysis of the current situation

Research and analysis of documentation on the NPC 69 kV T/L facilities and the EC substation and distribution facilities and business, in order to determine the current situation and to prepare basic data for Phase 2.

(2) Phase 2: Preparation of a program for transfer of the 69 kV T/L facilities

Preparation of various prospective programs based on options in such aspects as business, technology, financing, and legal arrangements, and assessment for identification of the optimal one.

1.3 Study Team Activities in the Philippines and Concerned Parties

1.3.1 Activities of the Study Team

From December 1996 to March 1998, the JICA study team engaged in the following activities in the Philippines.

- First field study: 15 January - 28 February 1997
  - Submission of inception report, with presentation and discussion
  - Collection of general information
  - Study of the current situation of the ECs

- Study of existing transmission, substation, and distribution facilities
- Study of the current situation of the existing 69 kV facilities
- Study of technical standards at the NPC and ECs
- Staging of the first steering committee meeting

- Second field study: 2 July - 15 August 1997
  - Submission of progress report, with presentation and discussion
  - Preparation of several options for transfer of the 69 kV T/L facilities
  - Staging of the first seminar
  - Staging of the second steering committee meeting
- Third field study: 1 - 30 October 1997
  - Submission of interim report, with presentation and discussion
  - Staging of the second seminar
  - Staging of the third steering committee meeting
- Fourth field study: 19 - 30 January 1998
  - Submission of the draft final report, with presentation and discussion
  - Staging of the third seminar

1.3.2 List of Concerned Parties

The study obtained the participation of members of the NEA, Department of Energy (DOE), NPC, ECs and other concerned Philippine agencies. The membership of the JICA study team is as follows.

- NEA (National Electrification Administration)

Teodorico P. Sanchez	Administrator
Leonardo R. Olano	Deputy Administrator for Technical Services
Thelma C. Aguila	Deputy Administrator for Finance
Edgardo Bangit	Director for Foreign Assisted Projects Office
Edgardo R. Piamonte	Director of Engineering
Victoria B. Lopez	Director of Loan Department
Yolanda M. Manund	Director of National Electrification Commission, Technical Staff
Nelia Irorita	Director for Planning
Cynthia P. Rivera	Manager of Accounting Division

Alicia F. Mercado	Manager of Cooperatives Operation Department
Salome D. Soriano	Manager of Planing & Project Development Div.
Judith Alferez	Personnel Division Manager
Eduardo C. Abulencia	Principal Engr.
Eduardo P. Gonzales	Principal Engr.
Raul M. Laig	World Bank Project Coordinator
Nonna G. Macatangay	Cooperative Operations Department
Thomas L. Villaflor	Computer Specialist, FAPO
Domingo S. Santiago,Jr	Regional Technical Manager, Region X

- DOE (Department of Energy)

Cyril C. del Callar, Esq.	Under Secretary

- NPC (National Power Corporation)

Manuel F. Delarmente	Manager, Vismin Planning Department
	Corporate Planning Group
Maria Garcia	Vismin Transmission Planing Group
Rosario N. Valderama	Manager, Property Accounting Division
Edgardo M. Orencia	Manager, Tariff Division, Office of the President
Herbert S. Ramos	Section Chief, Tariff Division
Alberto B. Reyes III	Corplan Specialist, Electricity Tariff Division
Venice C. Abad	Division Manager, Financial Strategic Planing Div.
German C. Saldon	Division Manager, Electrical Planning & Development Div.
Prime B. Negranza	Senior Engineer, Engineering Department
Cordell U. Rosario	Vice President, VRC(Visayas Regional Center)
Jules S. Alcantara	Manager, PTG, VRC
Lino T. Buenaflor, Jr	Regional Head, Visayas Engineering Services, VRC
Jose M. Bantilan	Division Manager A (Finance), VRC
Aristides A. Tonacao	Area-Manager, Eastern Visayas Area
R. E. Vitor	Sub-Area Manager, Leyte Sub-area
Rodolfo D. Daganzu	Samar Sub-Area
Bong F. Samonte	Technical Staff
	Privatization & Restructuring External Office

- NEDA (National Economic and Development Authority)

Jose S. Montero	Chief, Power and Electrification Division,
	Head Quarter
Christina Santiago	Senior Economic Development Specialist,
	Head Quarter

Buenaventura C. Go-Soco, JR Regional Director, Palo, Leyte

- Dorelco/Leyeco I
  - Roy F. Merro — General Manager
  - Uldarico C. Quintana — Finance Chief
  - Evelina R. Openiano — Chief Engr. Department
- Leyeco II
  - Juliet V. Bretencio — General Manager
  - Nilo C. Nobneuas
- Leyeco III
  - Engr. Edmundo C. Sumayod — General Manager
  - Eriberio C. Astorga — Finance Manager
  - Esteban L. Manlapas — Engr. Department Manager
- Leyeco IV
  - Cruzito P. Payapaya — General Manager
  - Serafin A. Cavero — Technical Staff Department Manager
- Leyeco V
  - Jovenal R. Alesna — General Manager
  - MA. Rosa S. Almanzor — Finance Chief
- Soleco
  - Ernesto T. Lamoste — General Manager
- Bileco
  - Paguito Y. Meracap — General Manager
- Samelco I
  - Oscar L. Pueblos — General Manager
  - Editha G. Biliran — Acting Finance Manager
  - Leo D. Nicolasora — Chief Engineer
- Samelco II
  - Ponciano R. Rosales — General Manager
  - Levia T. Vao — Finance Manager
  - Gervacio C. Chavez, JR. — Chief Engineer
- Norsamelco
  - Ricardo P. Largo — General Manager
  - Henry C. Banjawan — Engr. Staff Department Manager

- Esamelco

Engr. Nero T. Aberia, JR.	General Manager
Pancho T. Afable	Technical Staff Department Manager

- Moresco I

Engr. Melvyn D. Eballe	General Manager

- USAID (United States Agency for International Development)

John D. Kerr, PE	Energy Program Coordinator Energy Division Office of Environment
Cynthia A. Lowry, Ph.D.	Energy Program Manager

- CIDA (Canadian International Development Agency)

David E. Hepburn, P. Eng.	Project Manager, DESSAU

- JICA study team

Takahisa Murata	General Matters and Administration
Mitsuhiro Orisaka	Electric Power Company Management
Tatsuhiko Murakami	Transmission and Transformation Facilities
Akira Noda	Economics and Financing
Masayasu Ishiguro	Legal Matters

- JICA

Yuji Aonuma	Official in charge

1.4 Provision of Supplies

At the time of the second field study, the study team purchased a personal computer in Manila and made effective use of it for business forecasting applying the long-term management planning model developed by Nomura Research Institute, Ltd., (NRI) and for technology transfer. At the completion of the fourth field study, the computer in question was given by JICA to the Philippine side.

1.5 Software Preparation

The study team provided software for the aforementioned model for managers and administrators. Owned by NRI, the software is capable of use, on the personal computer basis, for corporate management and administration[1]. The study team transferred know-how for the use of

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[1] This model makes it possible to ascertain business income and expenditures, the funds management situation, debits and credits, and other management indicators for the succeeding five years.

this software, including the method of employment and techniques of corporate analysis.

The study team also provided calculation software of distribution line power flow developed by TEPSCO in order to grasp technical loss value of distribution line for NEA and ECs with the aiming of system loss reduction.

1.6 Counterpart Training

During the term of the study, training was furnished in Japan to the NEA counterpart for the purpose of imparting knowledge of electric power company operation and work related to transmission, substation, and distribution facilities as practiced in Japan, as follows.

- Trainee: Eduardo C. Abulencia
- Term: 4 November - 3 December 1997 (30 days)

1.7 Staging of Seminars

During the term of the study, three seminars were staged in Tacloban, Leyte for the purpose of transfer of technology to the concerned parties on the Philippine side, as follows.

1) First seminar (held in Tacloban, Leyte on 15 July 1997)

The first seminar was held for NEA members and the general managers, financial personnel, and technical personnel at the 11 ECs. It was occupied by explanation of the transfer options and presentation of the results of analysis in the aspects of business, finances, technology, and regulatory issues.

2) Second seminar (held in Tacloban, Leyte, on 13 October 1997)

The second seminar was held for the NEA members and the general managers, financial personnel, and technical personnel at the 11 ECs. It was devoted to an explanation of the narrowing down of the transfer options and assessment of options in the aspects of business, finances, technology, and regulatory issues.

3) Third seminar (held in Tacloban, Leyte, on 23 January 1998)

The third seminar was held for the NEA members and the general managers, financial personnel, and technical personnel at the 11 ECs. It was devoted to an explanation of the establishment of a new transmission cooperative and the draft plan for execution of the transfer of 69 kV transmission lines and recommendation.

CHAPTER 2

GENERAL SITUATIONS IN THE PHILPPINES AND RELEVANT STUDY AREA

Chapter 2: GENERAL SITUATIONS IN THE PHILIPPINES AND RELEVANT STUDY AREA

2.1 General Information

2.1.1 Geographical Conditions in the Philippines and Relevant Study Area

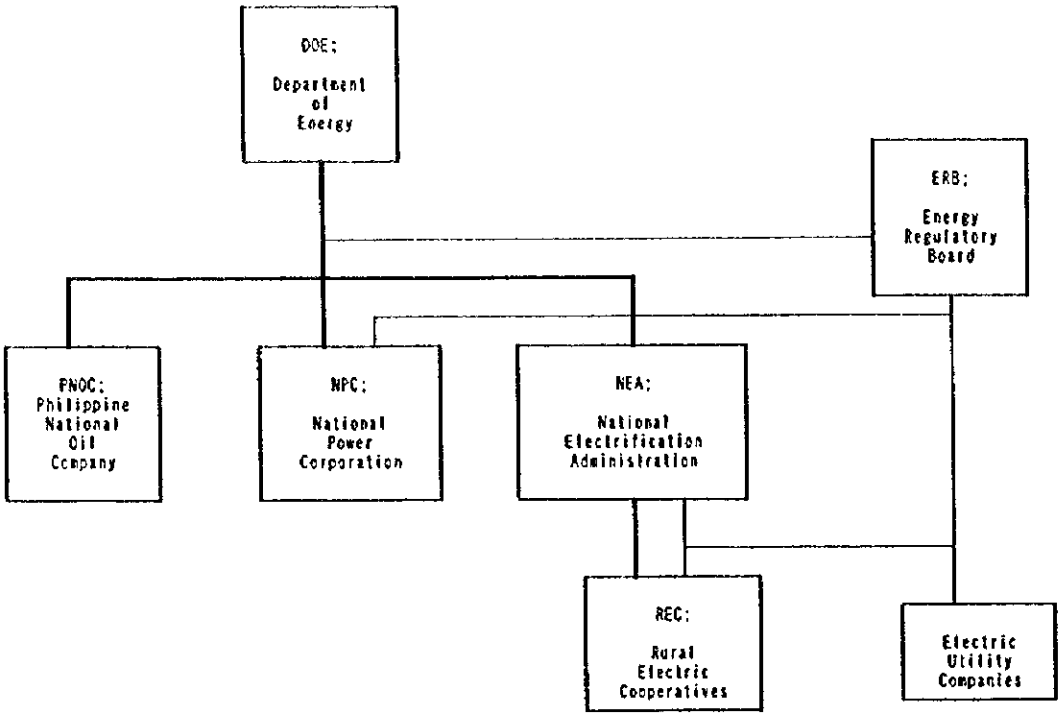
Located approximately from 116 deg. to 126.5 degrees east longitude and from 4.4 to 21.4 degrees north latitude, the Philippines is an island country consisting of some 7,100 islands. The major 11 islands: namely, Luzon, Mindanao, Negros, Panay, Mindro, Leyte, Samar, Cebu, and Bohol, occupy about 96% of the total land area of 299,404 km^2.

The islands of Leyte and Samar in the relevant study area of Eastern Visayas are located roughly at the center of the country from about 124 to 126 degrees east longtitude and about 10 to 13 degrees north latitude. They consist of six provinces, three cities (the central one being Tacloban), 140 municipalities and 4,390 Barangays[1]. The area of the relevant study area is 21,563 km^2.

2.1.2 Organization of the Government and Administrative Division

The Philippines is a constitutional republic. The president is elected by direct election of the people and the term of office is six years. (Reelection is prohibited. The term of office of the vice-president is six years and a third term is prohibited.) The Congress, the legislature, is comprised of the Senate and the House. The term of office of the Senate members is six years with a quorum of 24, and that of the House members is three years with a quorum of 250. The administrative framework consisted of 22 departments as of the end of 1996. The organization for the power sector is as shown below:

[1] Barangay: Small village as a minimum unit of administration



In the relevant study area, there are the three provinces of Leyte, Southern Leyte and Biliran in Leyte, and the three of Samar, Eastern Samar and Northern Samar in Samar. Therefore, there are six provinces and six governors in Eastern Visayas.

2.1.3 Fiscal Year

In the Philippines, the fiscal year starts on January 1 and ends on December 31.

Unless specified otherwise, the fiscal year used in this study is the same as the calendar year.

2.2 Population and Labor Force (Refer to Table 2.2-1)

2.2.1 Population

According to 1995 population statistics, the population of the Philippines was about 68.620 million in that year, and had increased at an average annual rate of 2.28 % over the years 1986 ~ 1995. The ethnic groups are comprised mainly of Malays and include Chinese, Spanish, people of mixed ancestry, and minorities.

The population in the relevant study area was estimated to be 3.050 million in 1990 and 3.430 million in 1996, consisting of 1.750 million males and 1.680 million females.

Based on the above statistics, the population density throughout the country and that in the relevant study area of Leyte and Samar are estimated to be 232/km^2 and 159/km^2, respectively.

2.2.2 Labor Force

The unemployment rate throughout the country decreased from 11.8% in 1986 to 8.6% in 1996. In the relevant study area, the population aged 15 years or older is 2.303 million, and the employment rate among potential workers is 71.0% (1.635 million workers). The average total number of employees (working population) is 1.497 million. Of this total, 59.4%, 9.5% and 31.1% are engaged in agriculture, manufacturing and service industries, respectively.

2.3 Economic Trend

2.3.1 General economic trend

With the full scale growth began 1994, the economy of the Philippines underwent favorable development also in 1996 and attained a growth rate of 5.7 %, higher than 4.8% in the previous year. Although the increase rate for commodity exports slipped from 29 % in 1995, it still remained high at around 18%. While the export of coconut oil was reduced sharply due to the drought and major typhoons in 1995, and the increase rate for clothing, a major export item, remained unchanged, export of semiconductors, ICs and other electronic parts underwent rapid increase and contributed to the overall increase in exports. In terms of destinations, the export to Singapore and United Kingdom proceeded favorably, and there was a rapid increase of exports to the United States and Japan, which each accounted for 20 ~ 30 % of the total value.

Import also remained steady and increased at a rate of nearly 30%, higher than that for export. Reflecting participation of overseas enterprises in the market, import of capital goods such as telecommunications and electrical equipment underwent rapid increase. As a result, the trade deficit expanded to roughly US$13 billion.

As for the foreign exchange rate, the peso, which held firm at roughly US$1 = 26.2 Peso in the earlier half, traced a downward trend in the latter half, and stood at 26.2 Peso for the year of 1996 as a whole.

The consumer price remained at 8.4%, a little higher than 8.1% in 1995. Above all, the latest price escalation in January 1997 shows a record low of 5% when compared with as high as 11.2% recorded in the same month of the previous year, according to the statistics announced by the National Statistics Office.

2.3.2 Gross Domestic Product (GDP)

Presented in Table 2.3-1 are the GDP throughout the Philippines and the gross regional domestic product (GRDP) in the relevant study area (Region VIII). According to this table, the annual average growth rates of GDP and GRDP are 1.9% and 1.6%, respectively.

2.3.3 Economic Situation in 1997

In 1997, the Philippine economy is predicted to grow at a rate of 5.1%, 0.6 point lower than in 1996, on the basis of favorable export and formation of fixed capital in addition to favorable increase of consumption as in 1996.

Since the prices of oil products are expected to be raised with liberalization of the oil industry, consumer prices are expected to rise at a rate of about 7% as a whole. Therefore, it has become one of the important political tasks to suppress inflation in 1997 as well.

As Subic, where the unofficial APEC Summit Meeting was held, has increasingly been attracting the attention of many investors, investment is expected to increase rapidly through an influx of foreign capital.

Following the cease-fire agreement signed between the Government and Moro People's Liberation Front in 1996, the island of Mindanao, where this front is based, is also expected to attract the attention of investors. To promote investment on Mindanao as a top priority, President Ramos has announced policy for priority allocations from the fiscal 1977 budget for development of this area.

2.3.4 Economic Trend on both Leyte and Samar Islands

In the Eastern Visayas District where both Leyte and Samar are located, the regional gross domestic production in 1996 was 57.7 billion pesos or only 2.6% of the nationwide total, as compared with 720.0 billion pesos or about 33% of the nationwide total, for the Metro Manila area. In the special export processing zone located at Isabel on Leyte, there are a copper smelting plant (PASAR) and a fertilizer plant (PHILPHOS). In contrast, the total amount of production on Samar is only about half as large as that on Leyte, and this island area is consequently specified as an underdeveloped one by the government. Although it has a wealth of latent tourism resources as well as deposits of copper, uranium and other minerals, Samar has not yet attracted the attention of investors and is ranked as an underdeveloped area due to lack of traffic access means and development of infrastructures.

Under the present circumstances, the life of the people on Samar is supported by the government's annual subsidies. The regional gross domestic product per capita in the Eastern

Visayas District, where both Leyte and Samar are located, decreased gradually at rates of 3.5 %, -1.0 % and -3.0 %, respectively, from 1991 to 1994 (in terms of actual prices). When considering that any industry able to promote the growth has not emerged and that the population on both islands has been increasing at a rate of about 5,000 per year, the average income level per capita, which is said to be 2,000 ~ 3,000 peso/month, is not expected to improve significantly in the future.

According to the Government Statistics Office, the nationwide unemployment rate was 9.5 % in 1995 and 8.46 % in 1996. Although these values represent the actual number of jobless persons, the potentially number is difficult to confirm in the areas comprised mainly of farming and fishing communities such as Leyte and Samar. Interviews with people on the islands suggest that roughly 40 % of the working population is unemployed.

2.4 Electrification Plan

The respective ECs have been receiving power mainly from the NPC and promoting rural electrification. From the standpoint of power supplier, therefore, the electrification plan being promoted by the government and the present status of electrification are presented below:

(1) Basic concept of electrification [Rural electrification plan of NEA (1996-2025)]

While bearing in mind "The Philippines 2000" vision of President Ramos and in consideration of the close connection between economic development and electrification, the National Electrification Administration (NEA) was established by the government in 1969 for promoting rural electrification. This was followed by the establishment of electric cooperatives (ECs), which now number 119. On the basis of the financing by the NEA for investment and operation of ECs, the rural electrification projects have been promoted for the past two decades. The benefits attained so far by rural electrification span the fields of relocation of industrial plants to rural areas (rural areas with raw materials and low labor costs); employment (increased working opportunities in rural areas); agriculture (multiple cropping by using irrigation water); health (lighting and medical treatment equipment); education (lighting for night as well as day classes and use of public halls); security (prevention of crime and damage from wild animals); promotion of tourism; reduction of population increase; and others (greater sense of participation in the sociopolitical life of the country).

The 1996 - 2025 electrification plan is as outlined below:

Policy :

- Realization of 100% electrification by 2018 and improvement in the efficiency of electric power utilities.

Targets :

- To secure the quality of electric power supply at a reasonable charge to every consumer
- To promote development of isolated areas by electrification
- To establish distribution systems ensuring autonomous growth

Strategy :

- Government subsidy, charge system allowing recovery of cost, establishment of Barangay electric cooperatives, and reduction of power loss.

Concrete target period of electrification: 1996-2025

- All municipalities : 1996
- Barangays : 2010
- All potential consumers : 2018

(2) Recent status of electrification

According to an announcement of the NEA, the number of electrified households in rural areas reached 4.38 million in 1997. However, this number is only 60% of 7.36 million potential households for which the Government had been promoting electrification. Due partly to restrictions in budget, the annual average pace of electrification over the years 1991 – 1996 was held to 0.2 million households. However, this value indicates significant improvement in the electrification rate when compared with the corresponding average of 0.09 million households over the years 1986 - 1990.

According to the official electrification plan, 5.14 million households are scheduled to be electrified within the coverage areas of ECs by the year 2000.

On the municipality level, 75 towns were additionally electrified in accordance with the electrification program of the government. Moreover, additional 43 Barangays were newly electrified, bringing to 24,557, as of October 1997.

Table 2.2 - 1 General Information

Year	Population (mil.)	Growth Rate (%)	Ann. Ave. Family Income (Peso)	Ann. Ave. Family Expenditure (Peso)	Unemployment Rate (%)
1986	56.00	2.44	31,238	27,026	11.8
1987	57.36	2.43	32,175	27,837	11.2
1988	58.72	2.37	40,408	32,521	9.6
1989	60.09	2.33	45,338	36,489	9.2
1990	60.73	1.07	51,776	41,670	8.3
1991	62.87	3.52	65,186	51,991	10.5
1992	64.26	2.21	70,988	56,618	9.8
1993	65.65	2.16	76,383	60,921	9.3
1994	67.04	2.12	83,161	67,661	9.5
1995	68.62	2.36	89,897	73,142	9.5
1996	69.80	1.72	97,448	79,285	8.6

Source: National Statistical Coordination Board, National Statistics, Labor Force Survey, Family Income & Expenditure Survey, National Demographic Survey
Data for 1990 and 1995 are actual data taken from the Census of Population and Housing.
Data for in-between years are projections.

Table 2.3 - 1 GDP (Whole country) and GRDP (Region VIII)

Year	GDP		GRDP	
	at current prices (in mil. Peso)	at constant 1985 prices (in mil. Peso)	at current prices (in mil. Peso)	at constant 1985 prices (in mil. Peso)
1982	317,179	653,469	7,996	16,136
1983	369,078	665,718	9,511	16,624
1984	524,482	616,963	15,250	17,548
1985	571,884	571,884	16,218	16,218
1986	608,888	591,423	16,309	16,057
1987	682,765	616,926	18,139	16,175
1988	799,183	658,583	21,586	17,297
1989	925,444	699,449	24,640	17,373
1990	1,077,237	720,691	28,269	17,322
1991	1,248,011	716,523	32,057	17,396
1992	1,351,559	718,942	34,681	17,088
1993	1,474,457	734,156	38,354	17,851
1994	1,693,278	766,451	43,644	18,387
1995	1,906,431	803,450	50,106	19,374
1996	2,196,595	848,451	57,708	20,081

Source: National Statistical Coordination Board

CHAPTER 3

MANAGEMENT
OF
ELECTRIC COOPERATIVES (ECs)

Chapter 3: MANAGEMENT OF ELECTRIC COOPERATIVES (ECs)

3.1 Nature of ECs

Each electric cooperative (EC) has been organized as a non-stock and non-profit cooperative association of a member system for which regional monopoly is legally permitted. All of the households and enterprises within the franchise territory are entitled to become the member-customers of the EC. In other words, each member is entitled to become an EC member by paying 5 pesos as a legally specified capital to the EC.

The 11 ECs (seven on Leyte and four on Samar) are undertaking power distribution services to their consumers in the respective franchise territories.

3.2 Status of Business Operation of the ECs

3.2.1 Decision-Making Organization

The final decision-making organization of each EC is the Board. The number of Board members varies slightly depending on the EC, and ranges from five at Leyeco II to 11 at Dorelco. Each Board is comprised of about eight members on average.

As of Dec. 1997

EC	Number of Director
Dorelco	11
Leyeco II	5
Leyeco III	8
Leyeco IV	6
Leyeco V	8
Soleco	8
Bileco	7
Samelco I	6
Samelco II	7
Norsamelco	9
Esamelco	8
Total	83

Source: NEA Reagional Office in Tacloban

As the membership of each Board is an honorary post, each member is elected as a representative of the city, town or village and ranked as a deputy representative thereof in many

cases. The professions of members vary widely, and include doctor, engineer, lawyer, etc. Board meetings are held twice a month on average, and the term of the Board Chairman is one year as a general rule.

3.2.2 Execution Organization

The actual daily job is carried out under the control of the General Manager (GM), a supreme decision-maker. The GM of each EC is selected by the EC itself according to the system approved by the National Electrification Administration (NEA).

Each EC organization contains an institutional department, financial department, and technical service departments.

The institutional department is responsible mainly for general administration, personnel, labor and other affairs; the financial department, for revenue and expenditures, capital and the electric rate; and the technical services department, for inspection, maintenance and improvement of distribution lines and substations including management of equipment and materials. In addition, one internal auditor is employed.

3.2.3 Management

The respective ECs analyze the business indicators in the following aspects each month and use such indicators for checking the management status and executing daily business:

(1) Budget management by expense item and analysis of balance

(2) Management of energy sales and revenues

(3) Assets management

(4) Management of demand and unit rate per kWh

(5) System loss

(6) Management of cash flow

(7) Miscellaneous statistics (total electrified distribution length, capacity of installed transformers, total number of customers and canceled consumers, number of staff, total amount of paid salary, and so forth)

3.3 Employer-Employee Cooperation

At all ECs on Leyte and Samar except Samelco I, labor unions are active. Those at Leyeco II, III and V are the most active. Leyeco II, Leyeco V Samelco I and Samelco II each have two

labor unions, one for the supervisor class and one for the rank-and-file class. Dorelco has three unions. The other ECs have one labor union. The main issue in labor dispute is wage hikes, but labor disputes concern the Collection Bargaining Agreement (CBA). The strike which was going on when the F/S Team visited Leyeco III was over the problems of the CBA. In the case of Leyeco V, there was a 22-day strike in 1995.

There exists no federation of labor unions as a superstructure of individual labor unions.

3.4 Pursuit of Higher Levels of Efficiency

3.4.1 The Present Status of Employees and the Number of the Customers per Employee

The numbers of staff and of customers per employee at the ECs in Eastern Visayas are shown in the table below along with the difference from national average number of customers per EC employee (170) for the years 1995 and 1996.

This difference from the national average ranges from 140 of Dorelco to –53 of Esamelco.

ECs in Leyte island are above the national average 170, and ECs in Samar island are below 170 due to the vastness of their supply areas. ECs in Leyte island are superior to ECs in Samar island in terms of effective use of employees.

Number of customers per EC employee in RegionⅧ

YEAR	1995				1996			
EC	No. of consumer	No. of staff	No. of consumer per one staff	Difference from the national average	No. of consumer	No. of staff	No. of consumer per one staff	Difference from the national average
	a	b	a/b	170*1	A	B	A/B	170*1
Dorelco	29,754	96	310	140	32,401	96	338	168
Leyeco II	28,262	165	171	1	28,893	165	175	5
Leyeco III	13,713	68	202	32	13,776	68	203	33
Leyeco IV	22,874	100	229	59	25,660	100	257	87
Leyeco V	41,267	187	221	51	41,334	187	221	51
Soleco	27,998	128	219	49	28,632	128	224	54
Bileco	9,317	51	183	13	8,985	51	176	6
Samelco I	17,868	115	155	-15	18,928	115	165	-5
Samelco II	20,496	125	164	-6	21,195	125	170	0
Norsamelco	14,797	110	135	-35	15,053	110	137	-33
Esamelco	13,330	114	117	-53	13,987	114	123	-47
Total	239,676	1,259	190	20	248,844	1,259	198	28

Source : NEA Chronicle 1993-1995
NEA Financial Statement, Dec 1996
NEA Regional Office in Tacloban on July, 1997.
*1 The figure of 170 is the average for all ECs in the country.

According to the NEA, investment efficiency is high in some areas and low in others due to difference of circumstances, and because facility investment is to be promoted even in areas of low investment efficiency in accordance with national policy for electrification, there has not been any guidance or order as regards the appropriate number of employees at ECs throughout the country.

3.4.2 Reduction of Non-Power Cost

The major cost categories at ECs are power cost and non-power cost. Power cost, namely, the expenditure for purchasing power from the NPC, occupies slightly more than 70% of the total cost. The personnel cost accounts for large part of the power cost. Non-power cost includes operation and maintenance cost of distribution line facilities, expenses related to customers, and general management expenses. Thus, it will be necessary for the respective ECs to reduce not

only the system losses and cost of power purchase from the NPC but also the non-power cost. The shares of the power and non-power cost are presented in the table below:

As of Dec. 1996

	Power cost (%)	Non-power cost (%)
Leyeco I	66.9	33.1
Leyeco II	81.2	18.8
Leyeco III	60.0	40.0
LeyecoIV	68.2	31.8
Leyeco V	79.3	20.7
Soleco	69.3	30.7
Bileco	67.2	32.8
Samelco I	66.8	33.2
Samelco II	70.8	29.2
Norsamelco	69.9	30.1
Esamelco	65.0	35.0

Source: NEA Regional Office in Tacloban

3.4.3 Reduction of the System Loss

The system loss of the respective ECs as of Dec. 1996 is as presented in the table below. The system loss consists of technical loss resulting from inefficiency of power equipment and a non-technical loss resulting from causes such as pilferage.

As of Dec. 1996

	System Loss(%)
Leyeco I	22
Leyeco II	18
Leyeco III	17
LeyecoIV	16
Leyeco V	13
Bileco	22
Soleco	19
Samelco I	10
Samelco II	16
Norsamelco	17
Esamelco	20

Source: from the interview of 11 ECs

The average power loss of the 11 ECs was 17.3% in 1996.

Since the electrical energy which otherwise would have been sold to obtain a revenue is lost due to system loss, it is an important task for the respective ECs to reduce the system loss for improving the business.

Assuming that all 11 ECs were to reduce power loss by 1%, for example, then [(sold electrical energy) x 1% x (unit electricity rate)], namely, [216,565 MWh (sold energy in 1996) x 0.01% x (3.98 pesos/kWh)] = a revenue increase of [8,619,287 pesos].

This increase of about 1% in the total revenue from the energy sales would help to improve the business situation of the ECs.

3.4.4 Improvement of Bill Collection Efficiency

Due to bad debts, illegal transaction and other causes, it is considerably difficult to achieve a bill collection rate of 100%. Therefore, the NEA has set target values for individual ECs. In other words, the target values range from 100% for Leyeco IV to 93% for Norsamelco, and have been set with careful consideration of the actual situation at the respective ECs.

In Leyte and Samar, financial institutions are rarely used for transferring public duties and fees; the bank utilization rate ranges from about 20% for Leyeco II, which has Tacloban in its supply area, to as low as only about 5% for Norsamelco, which has a sparsely populated supply area on Samar Island. Although it may be unreasonable to compare the transfer rate in the Philippines with that in Japan, which is as high as about 90%, given the differences of situation, it can be noted that the rate in Japan was only 40 ~ 50% in 1960s and gradually increased to a high level along with the rise of cash-less era. Thus, the burden of bill collectors has been reduced substantially.

Although education and training of bill collectors are basically essential for enhancing the bill collecting efficiency, it is also important to raise the consciousness of the entire EC staffs and improve the treatment of the collectors.

For example, it is considered effective to open a temporary business office of EC engineers, give a token present to customers who visits the office to pay bills, or visit a village for collecting bills during event in the area.

3.5 Present Status of Customer Services

Needless to say, it is important for any electric utility not only to discharge its responsibility to the public but also to offer quality services to its customers. The survey of respective ECs on both Leyte and Samar Islands revealed the following as regards customer services.

(1) The main office buildings of the respective ECs are all located adjacent to their substations distant from the load centers. The only exception is Leyeco II, which is located in the big load center of Tacloban City. Since the site area for substation and other conditions are readily available, electricity charge collection is carried out at the office constructed in the area.

Consequently, customers have to come to this office by bus for paying the electric bill and consultation on the services. Therefore, the location of each EC is considered inconvenient by customers. From the standpoint of customer services, the conditions should be improved and the office could be expected to relocate to the central part of the town as the load center.

(2) It is thought that ECs have little intention to increase sales, hold down the expenditures or improve load factors for cutting down the electricity rates because of their nature, i.e., they were established for receipt of supply of electricity upon payment of low membership fee.

3.6 Wages and Miscellaneous Allowances

The average monthly salary for staffs of the respective ECs is as presented in the table below:

Unit; Peso, As of Dec. 1996

Basic salary / ECs	Technical	Non-technical	Total staff
Dorelco	7,906	6,932	7,297
Leyeco II	7,900	7,400	7,552
Leyeco III	3,971	3,763	3,813
Leyeco IV	5,698	6,274	6,044
Leyeco V	8,613	5,961	6,982
Soleco	5,563	5,633	5,601
Bileco	5,968	6,045	6,018
Samelco I	6,452	6,207	6,311
Samelco II	6,859	7,164	7,008
Esamelco	5,879	5,510	5,667
Norsamelco	4,579	4,692	4,644
Average	6,554	6,109	6,270

Source: NEA Regional Office in Tacloban

As a representative case, the following miscellaneous allowances have been granted, in addition:

Cost of living allowance: 1,000 pesos/month

Rice allowance: 1,200 pesos/month

Clothing allowance: 2,500 pesos/year (About 200 pesos/month)

Medical allowance 2,500 pesos/year (About 200 pesos/month)

Child allowance 30 pesos/month/child (four children in maximum)

On a basis of these figures, the average salary and miscellaneous allowances for all staffs of the 11 ECs is estimated about 8,000 pesos per month.

The salary of technical staff at NPC is roughly 10,000 ~ 30,000 pesos per month. The above average amount of ECs staff is therefore about 30 - 80% as high as the salary of NPC technical staff.

3.7 Present Status of the Tariff System and Level

3.7.1 Factors Constituting the Overall Cost

Although the ECs have respectively different tariff schedules, the major constituents are as listed below:

i. Power cost
Cost of power purchase from the NPC and other power suppliers.

ii. Non-power cost
Cost of operation and maintenance of distribution system (including personnel cost, office overhead, etc.)

iii. System loss
Cost incurred due to technical and non-technical factors (pilferage) during transmission to final customers.

iv. Amortization cost
Cost of payment of the principal and interest on loans from NEA

v. Reinvestment cost

The reinvestment cost is allocated to cover a part of the labor cost, transportation charge, installation and construction cost, cleaning and other costs pertaining to rehabilitation and extension of distribution line facilities. This reinvestment cost is specified to be less than 5% of the amount of electricity sales revenue.

Section 3.7.3 (on the cost of EC power purchase) presents the components of power cost and unit cost for individual components for each EC.

3.7.2 Power Purchase Price from NPC

According to the power purchase price designated by NPC, the tariff systems have been set individually for the Luzon, Visayas, Mindanao and other respective grids. Among these tariff systems, the charge system for the Visayas grid is as presented below (approved by the ERB in July 1996).

i. Basic charges

Consumer classification	Demand charge (Peso/kW)	Power charge (Peso/kWh)
Small utilities (SU)	26.31	1.8739
Other utilities (OU)	120.03	1.6676
Visayan electric company (VECO)	280.44	1.3723
Non-Utilities (NU)	258.13	1.5644
Leyte industries	284.44	1.2301

Source:NPC Head Quarter

The SU includes Leyeco III, Soleco, Samelco I, Norsamelco, Esamelco and Bileco. The VECO has a maximum demand of 50 MW or over according to the customer categories of the NPC. Therefore, the VECO is included in the category of Big utilities (BU)[1], and its power charge is discounted slightly relative to those for the SU and OU, but its Demand charge is relatively high.

ii. Cost adjustment clause

The cost adjusted according to the following adjustment clauses is added to the basic charges.

a. Fuel and Purchased Power Cost Adjustment clause (FPCA)

Automatic adjustment clause to cover fluctuations of the fuel cost included in the purchased power cost

b. Foreign Exchange Rate Adjustment clauses (FOREX)

Automatic adjustment clause of the power rate to reflect the cost adjustments in debt service payment (FOREX I) and operating expenses related to foreign exchange (FOREX II) due to fluctuations in the foreign exchange rates of the Philippine peso to the US dollar, Japanese yen and other foreign currencies.

Based on the above clause i and ii, wholesale rate by NPC is shown in Appendix 3.7.

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[1] Big utilities means an utility with a maximum demand of 50MW or over according to the customer categories of the NPC. VECO is applied to it in the Visayas Grid.

iii. Primary Voltage Discount (PVD)

The discount rates have been set according to the transmission voltage as follows:

Below 69 kV	:	None
69 kV	:	2.5 (%)
115 ~ 138 kV	:	3 (%)
230 kV or over	:	3.5 (%)

3.7.3 EC Power Sales Tariffs

The respective ECs have calculated and set electric rates to their customers in accordance with the tariff system described in Clause 3.7.1 above after figuring in the price of purchase from the NPC.

The charge system has been set by classifying customers into the residential, commercial, industrial, public buildings and street lighting categories.

The power rate components and unit cost of individual components of the respective ECs in Region VIII as in Dec. 1996 are as presented in the table below:

As of Dec. 1996

EC	Power rate component (Peso/kWh)					
	NPC basic cost	Allow. For system loss	Cash operation expense	Amortization cost	5% re-investment	Total
Dorelco	1.9735	0.5566	0.9827	0.5251	0.2103	4.2482
Leyeco II	1.9735	0.5566	0.4132	0.3700	0.148	3.4613
Leyeco III	1.9735	0.5566	0.9428	0.7310	0.197	4.4009
Leyeco IV	1.9735	0.5246	0.8975	0.1315	0.1708	3.6979
Leyeco V	1.9735	0.3855	0.5999	0.1150	0.137	3.2109
Soleco	1.9735	0.5566	1.2408	0.7200	0.2120	4.7029
Bileco	1.8465	0.4616	1.1213	0.2071	0.1913	3.8278
Samelco I	2.2645	0.3103	1.2446	0.3490	0.1970	4.3654
Samelco II	1.9735	0.5376	0.7588	0.9330	0.1980	4.4009
Norsamelco	1.9735	0.4699	0.9426	0.8178	0.1971	4.4009
Esamelco	1.9735	0.4042	1.0030	0.2329	0.1060	3.7196

Source: ECs' statistical report

3.8 Bill Collection System

The number of bill collectors and meter readers differs at each EC and ranges from 17 at Soleco to eight at Norsamelco and Esamelco. And at six ECs, bill collectors have the posts of meter readers in addition.

	Bill collectors/ Meter reader	Bill collector	Meter reader	Total
Dorelco		8	8	16
Leyeco II	14			14
Leyeco III		7	6	13
Leyeco IV	9			9
Leyeco V	9			9
Soleco	17			17
Samelco I	9			9
Samelco II		8	5	13
Norsamelco	8			8
Esamelco		5	3	8

Source: Survey at each EC

Meters have been installed for all customers, and each collector also reads the meter as a routine task for subsequent caluculation of electricity charges. Meanwhile, a system for collection of a deposit of 1,000 pesos when installing a meter was adopted four or five years ago and has been helping to prevent meter theft and damage.

Meanwhile, billing calculation has basically been computerized, although some is still performed manually.

3.9 Business of the Respective ECs

The respective ECs are classified into categories of scale, as presented in the table below:

History of categorization

Region VIII

EC	1996		1995		1994		1993	1992	1991	1990	1989	1988
	Total Point	Category	Total Point	Category	Total Point	Category	Category	Category	Category	Category	Category	Category
DORELCO	77	A	75	A	57	C	C	A	D	B	B	C
LEYECO II	86	A	75	A	41	D	D	D	D	B	B	C
LEYECO III	52	D	44	D	41	D	D	D	D	C	C	D
LEYECO IV	88	A	85	A	90	A+	A	A	A	A	A	A
LEYECO V	81	A	79	A	88	A	A	A	B	A	B	B
SOLECO	80	A	81	A	82	A	A	A	D	B	B	B
BILECO	73	B	74	B	55	C	C	B	B	A	A	A
SAMELCO I	81	A	82	A	64	C	A	B	C	B	B	B
SAMELCO II	85	A	80	A	80	A	A	A	D	C	C	C
NORSAMELCO	40	D	31	D	48	D	D	D	D	C	D	D
ESAMELCO	56	C	56	C	41	D	D	D	C	C	D	C

Source: NEA Head Quater office
The report of JICA Preparatory & Preliminary Mission

The criteria for classification have been set in accordance with the NEA notification dated June 15, 1994. The main references for the categorization are as follows.

1 Amortization payment
2 System loss
3 Collection efficiency
4 Payment to the NPC, the power supplier
5 Non-power cost

These items are calculated in terms of the number of points for use in overall evaluation. The procedure for point scoring is presented in Appendix 3.9. The relationship between the number of points, and categorization and evaluation, is as follows.

No. of points	Categories	Evaluation results
90 or over	A+	A
75 ~ 89	A	B
65 ~ 74	B	C
55 ~ 64	C	D
30 ~ 54	D	No good
29 or less	E	Not any improvement

3.10 Status of Electric Power Demand and Supply

3.10. 1 The Present Status of Electrification

(1) Present status of electrification in Leyte & Samar

The newest data on the status of electrification that the study team has received are as of the end of June 1997.

The electrification ratios based on these data of the respective ECs in the Leyte and Samar areas in Region VIII are as presented below:

	Municipalities/Cities			Barangays			House connection		
	Potential	Actual	%	Potential	Actual	%	Potential	Actual	%
1. Dorelco	13	13	100	425	251	59	49,325	32,401	66
2. Leyeco II	3	3	100	68	62	91	35,592	28,893	81
3. Leyeco III	9	9	100	263	192	73	33,099	13,776	42
4. Leyeco IV	6	6	100	245	197	83	43,225	25,660	59
5. Leyeco V	12	12	100	417	301	72	98,080	41,334	42
6. Soleco	19	19	100	479	333	70	46,000	28,632	62
7. Bileco	8	8	100	131	99	76	22,372	8,985	40
8. Samelco I	13	9	69	416	160	39	39,281	18,928	48
9. Samelco II	15	15	100	480	253	53	40,000	21,195	53
10.Norsamelco	24	17	71	570	167	28	72,365	16,804	23
11. Esamelco	23	20	87	425	107	25	60,496	13,987	23
Total	145	131	90	3,919	2,122	54	539,835	250,595	46

Source: NEA Regional Office in Tacloban

Firstly, all of the municipalities served by the eight electric cooperatives Leyeco I, Leyeco II, Leyeco III, Leyeco IV, Leyeco V, Soleco, Bileco and Samelco II have been completely electrified. However, 14 municipalities in the service area of the three electric cooperatives Samelco I, Norsamelco and Esamelco have not yet been electrified.

As for the electrification rates of Barangays, as shown in the above table, the highest is 91% at Leyeco II. This is followed in order by Leyeco IV (83%), Bileco (76%), Leyeco III (73%), Leyeco V (72%), Soleco (70%), Dorelco (59%), Samelco II (53%), Samelco I (39%), Norsamelco (28%) and Esamelco (25%). Of these, Norsamelco and Esamelco are located in the mountainous zone on Samar Island, and Barangays in this zone have been lagging substantially behind other

Barangays in electrification due to poor transportation access and the existence of communist guerrilla.

On the household level, the highest electrification rate is 81% at Leyeco II, with a load center in Tacloban, the central city of Eastern Visayas. The lowest are at Norsamelco (23%), Esamelco (23%).

In non-electrified households, firewood is used as a fuel source, and kerosene and candles are used as illumination sources.

3.10.2 Electric Power Demand

(1) Overall status of power consumption throughout the country

As for the overall status of electric power consumption throughout the Philippines, according to the statistics announced by the Department of Energy (DOE), power consumption increased by 10% from 33.53 x 10^6 MWh in 1995 to 36.71 x 10^6 MWh in 1996. This is indicative of the favorable trend of the Philippine economy. This increase in power consumption is attributable largely to the fact that the industrial demand reached a record-high value of 11.84 x 10^6 MWh, a remarkable 32% of the total power consumption.

Above all, the rapid growth of industrial power demand is attributable largely to the increase of as high as 6% in demand among cement plants, textile factories, manufacturing plants, raw material processing plants, assembly and other industries.

The residential power consumption reached 9.15 x 10^6 MWh, the highest level after that of industrial power consumption. This represents an increase of 9% from 8.37 x 10^6 MWh in 1995.

The commercial demand, the third largest power consumption sector, showed an increase by 675,830 MWh to 7.07 x 10^6 MWh or 19.3% of the nationwide total consumption.

The power consumption for shopping centers, office buildings, restaurants, amusement centers and so forth is included in this category of power consumption.

The power consumption for street lighting, irrigation systems and other public facilities was 1.14 x 10^6 MWh last year. Moreover, the transmission loss arising due chiefly to inefficiency of power systems and pilferage reached as much as 6.14 x 10^6 MWh.

In the sales aspect, the total electrical energy sold to consumers increased by 9% to 29.23 x 10^6 MWh. The electrical energy sold by the Manila Electric Co. (MERALCO) increased by 12% to 17.8 x 10^6 MWh, and so accounted for the lion's share (61%) of the total annual sales in 1996.

The total electrical energy sold by the Rural Electric Cooperatives (RECs) occupied the second-largest share at 15%, or 4.48 x 10^6 MWh.

However, the electrical energy sold by the RECs increased only by slightly less than 1% over the previous year (1995).

(2) Future outlook for the electric power demand in the Leyte and Samar areas

i. According to the history of electric cooperatives nationwide published by the NEA, the annual average growth rate of electric power demand in Region VIII (Eastern Visayas) for the 11 years from 1986 through 1996 was about 5%. President Ramos took office in 1990, and the demand increased at an annual average rate of about 12.4% for the six years 1991 - 1996. This very high growth rate is deemed to reflect positive promotion of electrification by the Government through introduction of overseas assistance loans.

The past records and forecast values of electric power demand for the 12 years from 1996 through to 2007 are presented in Table 3.10.1 in Appendix. According to this table, the annual average growth rate of electric power demand in Region VIII (Eastern Visayas) is fairly high at about 14.1%. The power demand data in the above table were forecast by the respective ECs, and examined and corrected by the NEA. In this case, the power demand was forecast based on the Base Sales, Add-on Sales and Expansion Sales forecast methods, and the forecast values so obtained were totaled. The forecast methods were as follows; 1) the electric power demand by the existing customers in the already electrified Barangays (a village constituting a minimum administrative unit in the Philippines) was forecast by Base Sales Forecasting; 2) the demand by future customers in the electrified Barangays was forecast by Add-on Sales Forecasting; and 3) the demand by future consumers in the future electrified Barangays was forecast by Expansion Sales Forecasting (Refer to Appendix 3.10).

The table below shows actual electric power demand in 1985, 1991 and 1996 and forecast values in 2007 for each ECs.

Unit; MWh

EC	1986	1991	1996	2007	Ave. growth Rate 86-96	Ave. Growth rate 91-96	Ave. growth rate 96-2007
Dorelco	50,534	11,125	12,585	64,029	-13.0	2.5	15.9
Leyeco II	27,341	36,089	61,501	256,165	8.4	11.3	13.8
Leyeco III	3,141	3,257	7,212	31,681	8.7	17.2	14.4
Leyeco IV	3,523	6,618	12,826	25,532	13.8	14.1	6.5
Leyeco V	27,271	27,390	51,455	162,623	6.6	13.4	11.0
Soleco	4,185	7,160	13,676	33,892	12.6	13.8	8.6
Bileco	942	2,278	5,227	20,396	18.7	13.9	13.2
Samelco I	3,194	8,053	13,944	134,434	15.9	11.6	22.9
Samelco II	8,757	9,197	16,283	45,659	6.4	12.1	9.8
Norsamel	1,122	5,127	11,140	88,702	25.8	16.8	20.8
Esamelco	1,408	4,112	10,717	58,956	22.5	21.1	16.8
Total	131,418	120,856	216,565	922,069	5.1	12.4	14.1

Actual ←——— | ·····→ Forecast

Note : Data are as of December 1996
Source : 1.Rural Electrification CHRONICLE (Res. Comm. Ind. Pub. Others), 1985-1994
2.Printout data by Planning & Project Development Division, NEA H.Q. 1995-1996

Analysis of the demand forecast with reference to consumer categories in Tables 3.10-2 and 3.10-3 found that, as of the end of 1996, the residential demand occupied 52% of the total demand, followed by 15% for the commercial demand, 20% for the industrial demand and 15% for the others (public buildings, street lighting, etc.). In 2005, the residential demand is forecast to occupy 55% of the total demand, and the commercial, industrial and other demand categories, 10-15%, 20% and 15%, respectively. In other words, while the residential demand will increase slightly (about 3%), the commercial demand will undergo a slight decrease (about 4% or over). Although there may be some fluctuation, 50% or more of the total demand will basically be occupied by the residential demand, and the remaining 10 ~ 15%, 20% and roughly 15%, by the commercial, industrial and other demand categories, respectively. Since the share of the total demand occupied by the industrial demand (with the lowest tariffs) is forecast to remain unchanged, the average tariff rates at the 11ECs are not expected to decline substantially.

ii. Factors of difference in growth rate (Refer to Appendix 3.10)

The demand in Samelco I is forecast to increase substantially largely because the industrial demand is expected to increase as much as almost 12 times, from 73,194 kWh (1996) to 852,095 kWh (2007) per month on average respectively. This is attributable to the increase in the number of big industrial customers from three at present to nine in 2007.

Next, the reason that the forecast annual average growth rate is as high as 20.8% for Norsamelco and 16.8% for Esamelco is that electrification will presumably be promoted energetically in these areas where the present electrification rate is less than 30%.

In the case of Leyeco IV the growth rate is lowest due chiefly to the extremely low growth rate of the residential, commercial and industrial demand.

In the case of Leyeco II and Leyeco V, the demand is expected to increase substantially due to the addition of big new customers for Leyeco II in 1998 and for Leyeco V in 1997.

3.11 Past Investment and Future Investment Plan of ECs

Overseas aid and loans have been extended to the respective ECs through the NEA for promoting the policy of the Government of the Philippines for electrification, and the burden of repaying such debts has been squeezing the financial situation of the ECs. Although these situations are studied in Section 4.3, Chapter 4, the amount and categories of the past aid and loans are described here along with plans for the future.

3.11.1 Past Investment

Table 3.11.1 shows the amount of investment made over the three years 1994 through 1996. As about 90% of the total amount of loans has been allocated for electrification projects, it can be seen that promotion of electrification is a major task for each EC. According to the Loan Department of the NEA, the sources of finance for the electrification projects are the Overseas Economic Cooperation Fund (OECF) of Japan, World Bank and Asian Development Bank (ADB). As an agency responsible for finance on the part of the Government of the Philippines, the NEA is undertaking allocation of loans to the respective ECs by adding a small amount for adjustment of foreign exchange, domestic inflation and overhead management to the assistance loans from overseas countries. These funds are allocated by the respective ECs for the electrification project within their territories; emergency countermeasures against typhoon, flood, earthquake and other natural disasters; computer and other office equipment required for business operation; and vehicles for operation and maintenance of distribution facilities. The repayment of the loans for these investments has also been putting a strain on the management of

ECs.

3.11.2 Future Investment/Finance Plan

The plan for investment over the years 1998 - 2006 is shown in Table 3.11-2. These plans consist of: 1) distribution line rehabilitation plan; 2) distribution line extension plan; 3) substation construction or transformer extension plan following increase of demand; 4) power supply (electrification) plan to new consumers; and 5) solar power plant construction plan. Although the capital procurement plan for these plans has not been fixed yet, it is thought that overseas economic assistance will be requested from the OECF, World Bank, ADB and other international institutions, as in the past.

3.12 Expansion Program

3.12.1 Distribution Expansion Program

The plan for expansion of distribution lines of 13.2 kV and 240 V at each EC is shown in Table 3.12-1. The average annual addition from 1997 to 2005 ranges from 67.41 km at Norsamelco to 6.71 km at Leyeco II. While there is variation in this respect, each EC is emphasizing 13.2 kV single phase and 240 V distribution line development in order to meet load demand growth. Hence, it will also be essential to expand 69/13.2 kV substations. Since each EC plans to add 69/13.2 kV only one or two substations except for three at Leyeco III over the next ten years, there are apprehensions about an increase in D/L loss and drop in voltage with D/L extension in order to meet load demand. Ideally a 69/13.2 kV substation should be planned and constructed at the load center for supplying electricity. Since Leyte and Samar are now in the process of electrification and energization, there is a need to consider expansion of radial distribution lines.

The expansion plan for 13.2 kV/240 V distribution transformers is shown in Appendix 3.12.1-2. The power demand forecast and the growth of 13.2 kV/240 V distribution transformers submitted to the F/S Team is shown in the Appendix 3.12.1-1. Regarding the distribution transformer expansion plan for the power demand from 1997 to 2005, there are plans to boost distribution transformer capacity for certain EC, as follows.

- High-efficiency investment type : ECs with service areas containing cities, such as Leyeco II and V, can look forward to firm demand growth, this should result in an increase in efficiency per unit and curb the requisite transformer expansion relative to the pace of demand increase.
- Low-efficiency investment type : ECs which can expect only low demand growth, such as Leyeco IV and Sameleco I, have mainly scattered residential customers and cannot make

efficient plan for future distribution transformer expansion.

- Other type : ECs which can expect associated with demand growth on public buildings such as Norsamelco, can make some efficient plan for future distribution transformer expansion. In other words, the average addition could rise more slowly than the demand.

Table 3.12-1 Growth of 13.2 kV/240 V distribution transformer and power demand growth

Name of EC	Load demand (MW) in 1996	Annual Ave. growth (MW)	Annual Ave. of Dist. Transformer(MVA)
Leyeco II	15.0	4.46	1.84
Leyeco IV	3.4	0.26	0.59
Leyeco V	11.0	1.49	0.48
Soleco	4.4	0.32	0.55
Samelco	3.7	1.39	2.08
Esamelco	3.1	0.91	1.07
Norsamelco	4.4	1.62	1.04

3.13 Improvement in Business Operation of Respective ECs

For any enterprise, it is the most important task to improve its business operation. However, this task has tended to be neglected by the ECs as electric power suppliers since they have not been exposed to competition and the electricity rate has not been determined by the competitive mechanism.

The three essential principles of business operation are to "increase revenue", "curtail expenditures" and " offer the best possible services to every customer".

In the light of these three principles, it can be said first of all that EC management tend to have a low awareness of the need to increase revenue. The respective ECs seem to have been directing their resources solely for implementing the electrification projects, without doing their utmost to increase their revenues. As for holding down expenditures, the ECs have been somewhat lacking in determination to lower dependence on loans and improve the fundamental soundness of the business.

Furthermore, the ECs do not exhibit an attitude of trying to offer the best possible services to every customer. Therefore, it is an important task for each EC to enhance the service mentality.

3.13.1 Reform of Consciousness

As a prerequisite for improving the business operation, it is important to renew the consciousness of the EC staff. The reason is that interviews revealed strong desires among staff, the staff tended to stick to maintaining the status quo.

Under the current circumstances, a vital question is how to promote improvement in the business operation of the ECs. A primary requirement to this end is to adopt a performance evaluation system (ranking of each employee with reference from three to five grades, for example) to deepen the sense of responsibility and motivation for improvement to make strict evaluations on this basis, and to reflect the results in remuneration.

In order to eliminate the sense of easy dependence as well, it would be indispensable to make clear work responsibility and to transfer more authority downward.

Since these improvements would have to be promoted in coordination with the labor unions after obtaining their consent through discussion, sufficient time should be allocated for such discussion.

3.13.2 Improvement of Business Execution

(1) Improvement in the availability of equipment

For raising the availability of equipment, it is indispensable to operate the transformer banks and distribution feeders of any distribution substation at an optimum load. For this purpose, various countermeasures should be taken to clarify the operating conditions of the respective equipment at all times and operate the excessively underloaded transformer and distribution feeders at better loads as far as possible by increasing the load.

More concretely, industrial estates and housing complexes should be attracted near areas where the existing distribution feeders are not used or are operated at an excessively low load.

(2) Expanded use of computers

For calculating the electricity rates, computers are used by all of the 11 ECs.

However, these computers have not been used extensively enough for calculation of salaries and wages, accounting data processing, procurement of equipment and materials and other purposes. Since the introduction of computer system will make it possible to improve the business operation efficiency, save labor and ultimately cut down the labor force and cost, it would be essential for the respective ECs to promote wider utilization of computer systems.

3.13.3 Secural of Required Number of Employees

As one of the measures for improving the management of the respective ECs, it would be important to employ personnel in numbers that match the job. For calculating this required number of employees, it would firstly be necessary to review the existing job execution system and work load for the purpose of improving the work efficiency and establishing an optimum work system. Secondly, the job execution efficiency of each employee should be improved. On this basis, it will be possible to calculate an optimum number of required employees.

Although it would be important to cut down the personnel expenses to improve business operation efficiency, the management should clarify the capacity and volume of work for each employee and secure the appropriate number of employees.

Judging from the prevailing situation of chronically deficit operation, the management of each EC should urgently review the optimum number of required employees.

Specifically, the total number of employees at the 11 ECs increased by an annual average of 51.5 persons, from 1,097 in 1993 to 1,102 in 1994, 1,175 in 1995, 1,259 in 1996 and 1,303 in 1997. In other words, the number of employees per EC has been increasing at a rate of four or five per annum on an average.

Presented for example below is a procedure for reducing (optimizing) the number of employees. Considering that the acquisition of employees will also affect transfer of technical knowledge and formation of staff (business organization), it is essential to formulate an appropriate personnel plan from a long-term perspective.

(1) No replacement of retirees

The total number of employees who reached the mandatory retirement age (60) at the 11 ECs has been low, at five in 1994, ten in 1995, 17 in 1996 and six in 1997. Nevertheless, retirees should not be replaced.

(2) Effective utilization of early retirement system

Retirement of employees before sixty years of age should be encouraged by offering compensation (an additional retirement pay).

(3) Curtailment of new hiring

Although the average age level may raise, it would nevertheless be necessary to restrict new hiring to secure an optimum number of required employees.

3.14 Training and Education of Personnel

(1) Human resources for engineers for operation and maintenance (O&M)

When the required number of employees is taken into account, it is important to secure the appropriate number of employees depending on the nature and volume of the work. Since an engineer must have special technical knowledge and know-how, the personnel plan for engineering staff must be formulated on the basis of a long-term vision.

Seeing that the engineers of the ECs will undertake O&M of the 69 kV transmission lines including the distribution systems as well, it is considered essential for the respective ECs to: 1) review and improve the modern technology for the existing distribution systems, 2) have the engineers acquire advanced technology for O&M of 69 kV transmission lines, 3) promote accumulation and succession of technical knowledge and know-how, and 4) make effective use of the capability of every engineer. To satisfy these requirements, it would be necessary to execute training and education of the present engineers or hire new engineers.

As one of the options for improving the technical levels of the staff of the respective ECs by training them and having them acquire the technical knowledge and know-how for O&M of the 69 kV transmission lines, it is recommended to invite the experts of the NPC and other private distribution companies to lecture and give on-the-job training to the EC engineers.

As for the hiring of new engineers, every effort should be made to acquire the technical staff with the support of the private distribution companies (MERALCO, CEPALCO, etc.), and including transfer of the present staff of the NPC.

The accumulation and succession of technical knowledge and know-how should be efficiently executed. In other words, by extending transfer of technical knowledge and know-how to as many EC engineers as possible, it will be possible to realize the O&M services of a uniform quality through common use of such knowledge and know-how.

In addition, effective use of the engineers' capabilities will make it possible to mobilize engineers promptly in times of trouble and other emergency and to establish an organization for 24-hour O&M even on a routine basis through alternative shift.

(2) Technology transfer and training

The modern technology of the present EC staff are insufficient to execute construction, operation and maintenance, formulation of transmission line plans and various technical system analyses. Should the transmission facilities be transferred to the ECs without improving the technical levels of the EC staff, protracted outages and other troubles could possibly occur. Therefore, it would be essential to transfer technical knowledge and know-how sufficiently prior to the transfer of the 69 kV transmission lines.

The following are the two major methods for executing transfer of technical knowledge and know-how:

1) To employ professional engineers, and educate and train other engineers of the ECs for planning, construction, operation and maintenance of the 69 kV transmission lines; and

2) To have the EC staff visit outside organizations and receive training from the experts of the organizations, or to accept experts from outside organizations and have them train the EC staff to accumulate the technical knowledge and know-how.

Since the transfer of technical knowledge and know-how should be executed as promptly as possible for acceptance of in-operation of the transmission facilities a few years later, and since there is no budgetary allowance for employing professional engineers, it is considered preferable to execute technical training based on a combination of the above two methods. The preliminary technical training schedule until and immediately after accepting the 69 kV transmission lines is as proposed below:

a. To have the EC engineers receive training at appropriate training facilities for construction and maintenance of 69 kV transmission lines by obtaining the cooperation of the NPC, MERALCO, CEPALCO and other distribution companies before acceptance of the transmission facilities in 2001;

b. To have the EC staff master technical knowledge and know-how through on-the-job training from engineers dispatched from the NPC; and

c. At the same time, to have the senior engineers of the ECs seconded to the NPC to acquire technical knowledge and know-how regarding the concept of equipment planning and technical system analyses.

It will be necessary to improve the level of the electric power engineers further in the future. The case-study schedule for education and training of EC engineers is presented in Table 3.14-1.

This training will be carried out in the following two steps:

A. Basic technical training

Targets should be set for early education and training of younger staff (ten years or less after newly entering, including first-year staff). In short, this training is intended to have the staff acquire basic technical knowledge and know-how in the field related to transmission facilities within a decade after newly entering.

B. Professional technical training

As a further step after the basic technical training, the senior engineers (roughly 11 ~ 20 years after newly entering) will be dispatched to professional training institutions, the NPC or

equipment manufacturers to acquire the advanced and new professional technical knowledge and know-how pertaining to countermeasures for sophisticated trouble, technical system analysis and the concepts behind equipment planning.

As a part of the training and education of managers and supervisors, medium-level engineers (roughly 16 years after newly entering) active in management and supervision on the front line of the workplace will be trained for having them acquire basic knowledge and for deepening their sense of responsibility as managers in charge of instructing the younger engineers.

For realizing these training programs, it would be essential for the ECs to receive backup and support of the NEA.

3.15 Improvement in the Business Operation of the Enterprise Undertaking Operation and Maintenance of 69 kV Transmission Facilities

One of the important tasks for the ECs following transfer of the 69 kV transmission facilities is how to operate and manage the facilities and organizations more reasonably and appropriately, as well as how to acquire and make effective use of the staff for operation, maintenance and inspection of the facilities.

Thus, the target of establishing the ideal future formation of facilities and organization of staff has been proposed with reference to the example of Tokyo Electric Power Co. (TEPCO), a leading power company in Japan. Although the ECs on Leyte and Samar islands and TEPCO differ in respect of scale and historical background, the ECs and TEPCO have both been in search for improvement of efficiency and rationalization of business operation in response to the needs of the era.

Presented below is the historical transition of the organizational formation of TEPCO as a reference for EC organization and staffing to undertake operation and maintenance of the 69 kV transmission facilities:

(1) From the inauguration of TEPCO in 1951 until the 1970s, the operation and maintenance of distribution facilities as well as the electricity charges and consumer services were undertaken by each business office, and the operation and maintenance of the transmission lines, substations and load dispatching office were undertaken by the field engineering sector of each branch office. The on-site units of the field engineering sector were the transmission office, substations, maintenance station and load dispatching office. These units and the field engineering sector were controlled totally by each branch office.

(2) Along with the growth of the electric power demand, expansion of organizations, and increase in the number of employees in response to the request for improving services to customers since the early 1970s, it became necessary to establish an integrated consumer

service structure in combination with the business offices and field engineering sector. This was mainly because the lack of sufficient communication between the business office in charge of distribution service and the field engineering sector regarding scheduled shutdown of distribution lines for maintenance and customer services in the district had greatly inconvenienced customers. As a remedial measure for attaining sufficient coordination between the business office and field engineering sector as organizations with equal standing, the field engineering sector was reorganized into the engineering station as an independent organization. This made it possible to attain smooth coordination between the business office and engineering station and to improve the quality of customer services.

The key points in the integrated formation of the facilities and organization of staff of the business office and engineering station are as follows:

1) In pursuit of efficiency and rationalization, the same building was used jointly by the business office and engineering station, especially in the initial stage.

2) In the case of joint use of one building, the welfare and recreation facilities, meeting rooms and so forth were also shared commonly although the organizations were different.

3) The operation and maintenance of the distribution substations and load dispatching offices were undertaken by the engineering station.

4) Moreover, the operation and maintenance of all of the higher to lower voltage system transmission facilities were undertaken by the engineering station.

5)The organization and staff were kept separate.

When the above example of reorganization is applied to the organization of the respective ECs scheduled to undertake operation and management of the 69 kV transmission facilities, the future ideal form of burden sharing by the ECs is considered to be as described below in view of improvement of efficiency and rationalization of business operation of the ECs:

A. The organization undertaking operation and maintenance of the 69 kV transmission facilities should establish one facility on Leyte and one facility on Samar.

B. The organization responsible for operation and management of the 69 kV transmission facilities should in the future undertake operation and maintenance of the 69/13.2 kV substations and 69 kV transmission lines after absorbing the substation operation and maintenance sectors of the ECs. Meanwhile, although it would be desirable to modify the existing 69/13.2 kV substations immediately for unmanned operation, the so-called substation tenders should be stationed in such substations until this automation.

C. The operation and maintenance of the distribution line facilities downstream of the 69/13.2 kV substations as well as collection of electricity charges and other services to consumers

should be undertaken by the existing ECs.

D. For accommodating the staff of the organization scheduled to undertake operation and management of the 69 kV transmission facilities, the existing buildings should preferably be used commonly with the ECs for the time being to cut down the expenditures. For example, the building of Leyeco II on Leyte Island and that of Samelco II on Samar Island should be used commonly for these purposes.

The organization of the ECs sheduled to undertake operation and management of the 69/13.2 kV substations and 69 kV transmission facilities corresponds to the engineering station of TEPCO, and the ECs executing operation and maintenance of distribution facilities as well as collection of electricity charges and other customer services, to the business office of TEPCO.

E. Based on the formation proposed above, it will be possible for the respective ECs to make common use of the organizations and staffs of the general affairs, labor and accounting sectors (institute sectors).

F. For attaining efficient and effective utilization of human resources, the organization undertaking operation and management of 69 kV transmission facilities and the ECs should promote mutual exchange and support among transmission and distribution engineers, as well as integrated consultation with customers and settlement of claims in one package (one-stop proceeding) system, in line with the concept of integrated services at the business offices and engineering stations in the case of TEPCO. This will make it possible to improve the quality of customer services.

In light of the ideal arrangement of the future organization of electric utility companies, the organization undertaking operation and management of the transmission facilities and the ECs should promote integrated customer services and operation ranging from the power distribution facilities (69 kV transmission facilities through to distribution facilities) to collection of electricity charges and other customer services.

For training and acquisition of technical staff and engineers for operation, maintenance and inspection of the 69 kV transmission facilities, the staffs of (the respective ECs) should be trained in the initial stage subsequent to transfer of the facilities based on an OJT system backed by the present staff of the NPC and other private distribution companies (MERALCO, CEPALCO, MORESCO I, etc.) having a wealth of experience in operation, maintenance and inspection of such facilities. At the same time, it will be necessary for the respective ECs to execute training of their staffs in accordance with the training program presented in Section 3.14

of Chapter 3 for improving the technical level and skill of the staffs. In this case, it is also deemed essential (for the ECs) to extend exchange of mutual staff and support between the operation and maintenance sectors of transmission and distribution facilities together with the business offices and engineering stations.

Table 3.10 - 1 ACTUAL LOAD DATA & DEMAND FORECAST

Region VIII

Unit; MWh As of Dec. '96

EC	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Ave. growth rate 86-96	Ave. growth rate 91-96
DORELCO	50,534	57,276	34,916	10,068	10,903	11,125	9,064	9,147	11,052	10,924	12,585	-11.9	2.5
LEYECO II	27,341	32,706	32,293	28,404	35,114	36,089	38,818	41,612	47,175	49,829	61,501	7.6	11.3
LEYECO III	3,141	2,961	3,376	3,691	4,190	3,257	4,402	4,868	5,530	5,579	7,212	7.8	17.2
LEYECO IV	3,523	3,827	5,286	6,292	7,334	6,618	8,075	8,962	9,899	10,826	12,826	12.5	14.1
LEYECO V	27,271	27,924	23,787	24,188	26,027	27,390	31,342	34,537	37,619	42,672	51,455	5.9	13.4
SOLECO	4,185	5,019	5,559	6,568	7,193	7,160	8,815	9,416	8,696	10,789	13,676	11.4	13.8
BILECO	942	1,050	1,451	1,923	2,315	2,728	3,098	3,524	3,895	4,488	5,227	16.9	13.9
SAMELCO I	3,194	3,181	2,656	4,772	7,231	8,053	7,240	8,299	9,400	10,624	13,944	14.3	11.6
SAMELCO II	8,757	9,074	5,594	6,827	8,644	9,197	9,636	10,774	11,468	13,541	16,283	5.8	12.1
NORSAMELCO	1,122	1,325	1,227	1,533	3,845	5,127	6,240	7,175	8,034	8,508	11,140	23.2	16.8
ESAMELCO	1,408	258	481	2,064	3,211	4,112	4,564	5,634	6,217	7,910	10,717	20.3	21.1
Total	131,418	144,601	116,626	96,330	116,007	120,856	131,294	143,948	158,985	175,690	216,565	4.6	12.4

Actual

REC	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Ave. growth rate 96-2007
DORELCO	12,585	14,835	17,025	19,290	22,249	25,865	30,010	34,849	40,539	47,187	54,965	64,029	15.9
LEYECO II	61,501	63,958	105,333	113,507	122,945	134,211	147,707	163,291	181,394	202,663	228,116	256,165	13.8
LEYECO III	7,212	8,168	9,364	10,773	12,385	14,273	16,492	18,853	21,491	24,458	27,830	31,681	14.4
LEYECO IV	12,826	13,311	14,093	14,952	15,918	17,014	18,193	19,455	20,808	22,262	23,832	25,532	6.5
LEYECO V	51,455	66,111	72,162	77,875	84,591	92,613	101,706	111,538	122,331	134,444	147,701	162,623	11.0
SOLECO	13,676	14,679	15,858	17,364	18,943	20,759	22,627	24,617	26,733	28,939	31,327	33,892	8.6
BILECO	5,227	5,621	6,143	6,774	7,560	8,490	9,742	11,120	12,749	14,766	17,268	20,396	13.2
SAMELCO I	13,944	16,936	21,069	25,529	30,753	37,623	46,515	57,815	70,698	87,060	107,853	134,434	22.9
SAMELCO II	16,283	17,486	18,963	20,843	23,132	25,619	28,362	31,255	34,429	37,899	41,630	45,659	9.8
NORSAMELCO	11,140	12,822	17,226	19,958	23,470	27,913	33,378	40,115	48,630	59,296	72,340	88,702	20.8
ESAMELCO	10,717	11,981	14,244	17,120	21,083	24,700	29,898	35,141	40,308	45,832	51,935	58,956	16.8
Total	216,565	245,908	311,480	343,985	383,029	429,080	484,630	548,049	620,110	704,806	804,797	922,069	14.1

Forecast

Source: 1. Rural Electrification CHRONICLE(Res. Com. Ind. Pub. Others), 1985-1994
: 2. Printout data by Planning & Project Development Division, NEA H.Q. 1995-1996
: 3. Actual load data derive from the financial statement as of December 1996

Table 3.10 - 2 Power Demand Forecast in category wise

Unit: GWh. %

Year / Category	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Residetial	113,027	132,588	147,938	167,188	190,305	217,898	251,256	289,818	334,361	386,148	447,024
%	52.2	53.9	47.5	48.6	49.7	50.8	51.8	52.9	53.9	54.8	55.5
Commercial	32,947	32,044	34,849	38,186	41,952	46,355	51,392	57,038	63,342	70,642	78,579
%	15.2	13.0	11.2	11.1	11.0	10.8	10.6	10.4	10.2	10.0	9.8
Industry	42,653	46,721	52,269	58,543	66,086	75,580	87,251	101,885	118,460	138,893	164,295
%	19.7	19.0	16.8	17.0	17.3	17.6	18.0	18.6	19.1	19.7	20.4
Public Bld.	8,827	7,805	8,613	9,537	10,702	12,015	13,604	15,437	17,627	20,091	23,009
%	4.1	3.2	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9
Others	19,111	26,749	67,813	70,530	73,983	77,231	81,126	83,871	86,323	89,029	91,891
%	8.8	10.9	21.8	20.5	19.3	18.0	16.7	15.3	13.9	12.6	11.4
Total	216,565	245,907	311,482	343,984	383,028	429,079	484,629	548,049	620,113	704,803	804,798

Source: ECs' Financial Statement Report, December 1996. and interview at NEA

Table 3.10 - 3 Power Demand Forecast in category wise

Unit: GWh

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Residetial	113.0	132.6	147.9	167.2	190.3	217.9	251.3	289.8	334.4	386.1	447.0
Commercial	32.9	32.0	34.8	38.2	42.0	46.4	51.4	57.0	63.3	70.6	78.6
Industry	42.7	46.7	52.3	58.5	66.1	75.6	87.3	101.9	118.5	138.9	164.3
Others	27.9	34.6	76.4	80.1	84.7	89.2	94.7	99.3	104.0	109.1	114.9
Total	216.6	245.9	311.5	344.0	383.0	429.1	484.6	548.0	620.1	704.8	804.8
Public Bld.	8.8	7.8	8.6	9.5	10.7	12.0	13.6	15.4	17.6	20.1	23.0
Others	19.1	26.7	67.8	70.5	74.0	77.2	81.1	83.9	86.3	89.0	91.9

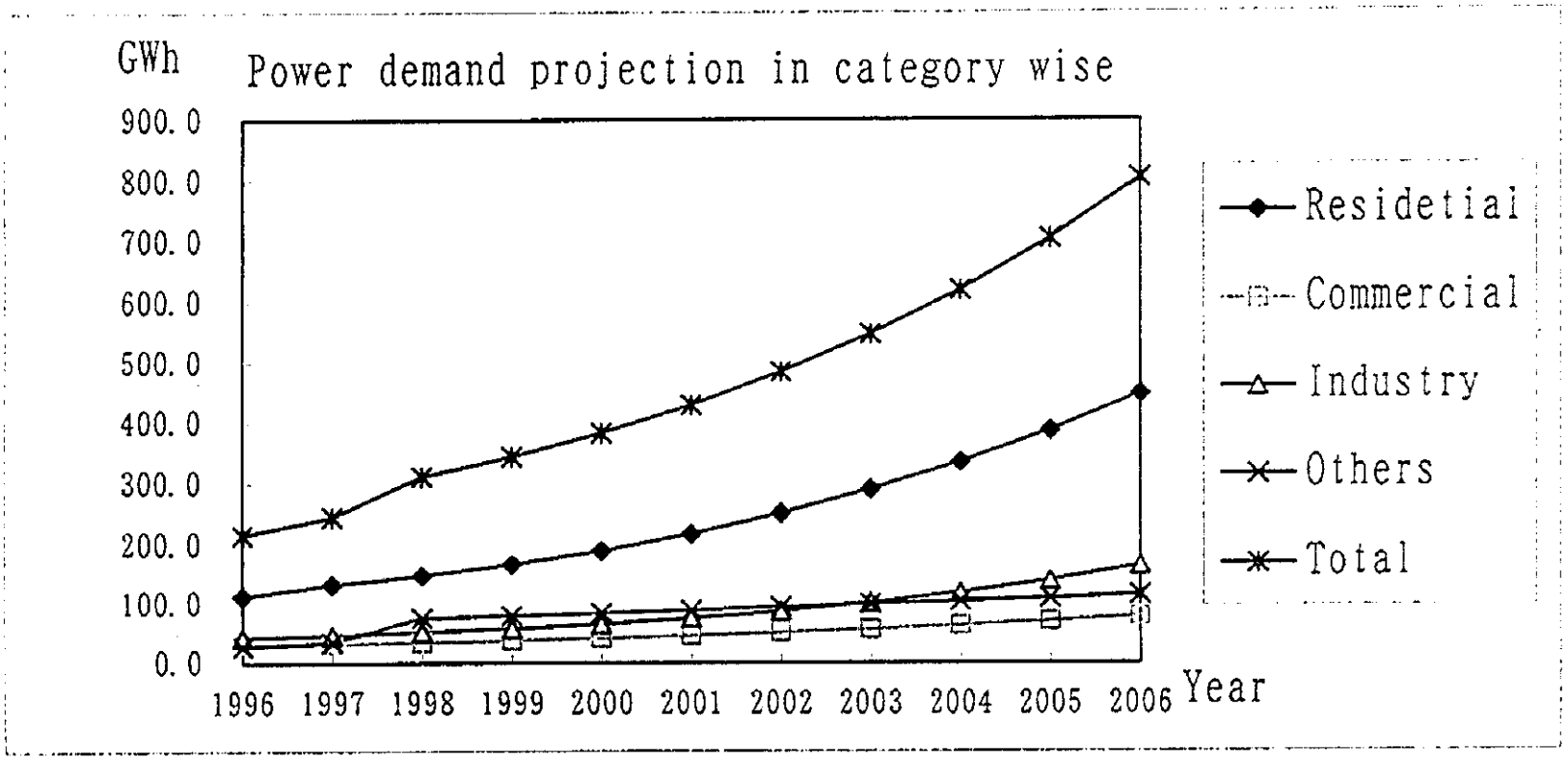

Table 3.11 -1 Historical record of loan released

Region VIII

Unit:(000)P

YEAR	1994								1995												1996									
EC	RE	EL-T	ADB	LOG	VEH	WB-RE	WB-LOG.	Total	RE	EL-T	EL-C	ADB	LOG	VEH	WB-RE	WB-LOG.	WB-RERP	WB-RERP-LOG.	SEP	Total	RE	EL-T	EL-C	ADB	LOG	VEH	WB-RE	WB-LOG	WB-RERP	WB-RERP-LOG.	SEP	Total
DORELCO	87,117	409	296	0	0	0	0	87,822	87,515	409	5,473	296	0	0	0	0	0	0	0	93,693	87,608	409	5,473	296	0	0	0	0	0	0	0	93,786
LEYECO II	63,142	0	296	0	356	0	0	63,794	66,359	0	2,200	296	0	356	0	0	0	0	0	69,211	66,468	0	2,200	296	0	356	0	0	0	0	0	69,320
LEYECO III	32,183	945	296	43	250	0	0	33,717	34,402	945	3,477	296	43	250	0	0	0	0	0	39,413	34,689	945	3,477	296	43	250	0	0	0	0	0	39,700
LEYECO IV	38,737	1,219	296	50	0	0	0	40,302	37,514	1,218	0	296	50	0	0	0	0	0	0	39,078	38,359	1,219	0	296	50	0	0	0	0	0	0	39,924
LEYECO V	86,303	5,207	296	0	356	0	0	92,162	81,671	5,207	5,436	296	0	356	0	0	0	0	0	92,966	81,366	5,207	5,436	296	0	356	0	0	0	0	0	92,661
SOLECO	62,584	3,252	296	0	356	0	0	66,488	55,227	3,252	0	296	0	356	0	0	0	0	0	59,131	56,390	3,252	0	296	0	356	0	0	0	0	0	60,294
BILECO	37,177	190	0	141	0	0	0	37,508	36,971	190	0	0	141	250	0	0	0	0	0	37,552	36,121	190	0	0	297	250	0	0	0	0	0	36,858
SAMELCO I	41,139	536	296	45	0	0	0	42,016	49,632	536	0	296	45	0	0	0	0	0	0	50,509	51,005	536	0	296	45	0	0	0	0	0	0	51,882
SAMELCO II	103,459	3,203	296	427	356	18,260	1,872	127,873	105,281	3,203	626	296	427	356	17,950	1,872	0	719	0	130,730	101,819	3,203	626	296	523	356	21,531	1,872	0	723	300	131,249
NORSAMELCO	63,747	0	0	0	356	0	0	64,103	64,425	0	2,326	0	0	356	0	0	0	0	0	67,107	66,450	0	2,326	0	0	356	0	0	0	0	0	69,132
ESAMELCO	68,495	7,187	0	0	0	0	0	75,682	65,662	7,187	2,588	0	0	0	0	0	0	0	0	75,437	68,102	7,187	3,000	0	0	0	0	0	0	0	0	78,289
Total	684,083	22,148	2,368	706	2,030	18,260	1,872	731,467	684,659	22,147	22,126	2,368	706	2,280	17,950	1,872	0	719	0	754,827	688,377	22,148	22,538	2,368	958	2,280	21,531	1,872	0	723	300	763,095

Source: NEA, Foreign Loan Department Data

Remarks: RE; Rural Electrification, EL; Emergency Loans, as for damaged by typhoon, foods, earthquake etc.

ADB; Asian Development Bank loan, LOG. logistics, VHE; Vehcles, WB-RE; World Bank loan for RE, WB-LOG.; WB loan for LOG.

Table 3.11 - 2 Investment program & fundrequirement in Region VIII from 1998 to 2006

Year	Physical Indicators					Funding Requirements (P'000) in Resion VIII			Funding Requirements (P'000) in Pilippines *2		
	Rehab. (ckt-kms)	Expansion (ckt-kms)	S/S 5 MVA	Solar (PV) Nos. of Units	Consumer Connections	NEA*1	ECs*1	TOTAL	NEA	ECs	TOTAL
1998	315	1,022	3	500	23,502	201,264	92,513	293,777	2,715,831	1,248,364	3,964,195
1999	319	890	2	175	26,998	346,457	79,973	426,430	3,327,531	768,102	4,095,633
2000	319	846	3	100	24,810	235,733	57,283	293,016	2,250,085	546,769	2,796,854
2001	324	856	1	0	29,364	271,719	65,117	336,836	2,331,717	558,787	2,890,504
2002	338	827	4	0	30,815	259,211	61,316	320,527	2,363,327	559,044	2,922,371
2003	352	914	1	0	30,998	264,364	61,913	326,277	2,446,438	572,945	3,019,383
2004	366	910	3	0	27,885	253,303	58,912	312,215	2,441,938	567,935	3,009,873
2005	380	914	0	300	28,344	294,426	72,911	367,337	2,521,359	624,388	3,145,747
2006	387	982	3	100	26,664	277,399	68,370	345,769	2,550,572	628,629	3,179,201

Source: NEA, and this program is as of September 1997.

Remarks *1: Funding requirement in Region VIII are allocated in proportion to the ratio between NEA and ECs of the nation wise

*2: The total amount of funding requirement is derived from the figure as of july 1997.

Table 3.14-1 Training schedules of engineers for operation and management of 69 kV transmission lines in the future

Basic technical training

Contents of training: Technical knowledge and knowhow on construction and maintenance of transmission lines
Training method: Field on-the-job training
Place of training: Respective work sites
Training instructors: Engineers of the NPC or MERALCO for the time being and managers and supervisors of the Respective ECs after training and education of such managers and supervisors

Professional technical training

Contents of training: Procedures for equipment planning, technical system analyses and so forth
Training method: Dispatching ECs' engineers to other organizations and training mainly through lectures by using personal computers and other training equipment
Place of training: Outside organizations including the NPC, MERALCO and manufacturers
Training instructors: Engineers of outside organizations to which the ECs' engineers are to be dispatched

Education of managers and supervisors

Contents of training: Technical instruction (training) method, knowledge and sense of responsibility as a manager or supervisor
Training method: Exchange of opinions through discussions
Place of training: Respective workplaces of the ECs
Training instructors: Managers and senior engineers

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

Years after new entry

CHAPTER 4

PRESENT SITUATION ON FINANCIAL POSITION AND ACCOUNTING OF ECs

Chapter 4: PRESENT SITUATION ON FINANCIAL POSITION AND ACCOUNTING OF ECs

4.1 Division into Three Groups in terms of Earning Power and Finances

The 11 electricity cooperatives (ECs) of Leyte and Samar can be divided into three groups in terms of their earning power and finances in fiscal 1996 (January - November).

The first group consists of ECs on a large scale and with a good financial position. These include Leyeco II and Leyeco V, which are about three times as large as the other ECs and rank above them in terms of earnings, cash flow, and other financial aspects. Besides being on a larger scale, this group enjoys the presence of many small-scale industrial and commercial customers. At Leyeco V, the high earnings are also underpinned by superior management. Leyeco V's operating margin ratio (operating margin/revenue) is 11.1 percent, lower than those of 15.3 percent for Samelco I and 17.3 percent for Samelco II. However, its equity ratio of 26.5 percent is much higher than those of 18.1 percent for Samelco I and 6.8 percent for Samelco II. While all of the ECs have a high debt ratio (long- and short-term debts / total assets), those at Leyeco II and Leyeco V are lower, at 50.1and 49.4 percent. Nevertheless, the order of 50 percent cannot be termed a favorable level for a debt ratio judging from the levels ordinarily found among businesses of good standing.

The second group includes Leyeco III, Leyeco IV, Samelco I, and Samelco II. Samelco I and Samelco II both have higher operating margin ratios than the ECs in Group 1, but also have low equity ratios and high debt ratios. In addition, they are smaller than the ECs in the first group. They are turning a profit.

The third group consists of ECs with low earning power and problems in the aspect of finances. It includes Leyeco I, Soleco, Bileco, Esamelco, and Norsamelco. Because they are on a small scale and do not have a good business environment, they are at a disadvantage in respect of earning power and finances. The debt ratio reaches 89.7 percent at Soleco and 78.5 percent at Leyeco I. Both of these ECs also have a minus (negative) equity. Esamelco has a negative operating margin and Norsamelco has a negative net profit. Equity ratios are also very low, being 4.9 percent at the former and 3.5 percent at the latter. Repayment of loans from the NEA is being delayed at Soleco and Norsamelco, which are experiencing particularly great funding difficulties.

The islands of Leyte and Samar are located on the typhoon belt, and outages sometimes last for one or two months. This situation hurts earnings and imposes a heavy burden of cost for facility replacement and rehabilitation. This evaluation of each group was based on recent financial statements and took account of earning power, business scale, and financial position.

Three Groups of ECs

Group	Ecs	Revenue	Operating Margin	Net Margin	Depreciation	Cash Flow	Equity Ratio	Amortization(NEA) / Total Assets
							%	%
1	LEYECO II	216.5	15.7	12.3	6.1	18.4	25.1	50.1
	LEYECO V	175.4	19.5	9.8	4.6	14.4	26.5	49.4
2	LEYECO III	33.8	3.7	1.3	1.1	2.4	9.3	58.9
	LEYECO IV	55.5	4.9	(1.4)	4.4	3.0	24.9	48.5
	SAMELCO I	52.1	8	5.5	2.1	7.6	18.1	67.9
	SAMELCO II	13	12.6	3.5	3.8	7.3	6.8	88.1
3	LEYECO I	56.5	6.4	3.6	1.9	5.5	(3.8)	78.5
	SOLECO	57.3	5.8	(0.7)	5.3	4.6	(3.1)	89.7
	BILECO	26.6	5.8	2.9	1.0	3.9	9.5	85.3
	ESAMELCO	47.8	(0.2)	0.2	2.0	2.2	4.9	83.8
	NORSAMELCO	48.2	4.0	(0.2)	2.4	2.6	3.5	80.1

※Each Ecs figures is estimated on the annual base by November 1996, except Equity Ratio, and Debt Ratio.

4.2 Causes of Deficit at ECs

The following can be cited as factors behind low earning power and deficit at ECs.

(1) Limitation of the scope of business activities

(2) High cost of power purchase; the cost of power purchase from the National Power Corporation (NPC) accounts for 70 percent of the total cost, and cannot be easily reduced by EC efforts. At the same time, ECs are prohibited from purchasing from other suppliers (IPPs or other franchises).

(3) The major firms are supplied with power directly from the NPC. Two cases in point are PASAR and PHILPHOS, which are the two big users on Leyte island and together consume 32 million kWh per month, or about 64 percent of the total for the island. The EC supply is therefore basically confined to small-scale users and the residential sector, and this feature makes it difficult to improve earnings.

(4) High loss rates

A. Technical loss is in the range of 7 - 8 percent

B. Non-technical and human loss is high, in the range of 10 - 15 percent. Because wages are low, meter readers and collectors are apt to misrepresent funds

(5) Insufficient capabilities among EC management

Partly because they are cooperative associations inform, the ECs have few managers who emphasize improvement of earnings. The ECs borrow funds from the National Electrification Administration (NEA), but some managers have a low sense of responsibility for repayment. There is an awareness of borrowing official funds. Furthermore, some managers are not making a sufficient effort in management. In some cases, persons with a strong interest in politics are selected to head ECs. In this connection, the NEA is instructing ECs to appoint people with management experience to lead them.

(6) Factors behind deficit at small ECs

A. High-cost structure due to the relatively small number of customers spread over a wide area

B. High cost of associated with increasing the electrification rate

C. High system loss

These factors lie behind the low earning power of the smaller ECs.

4.3 Case Study of Leyeco V

At Leyeco V, rate revenue increased from 77.3 million pesos in 1991 to 175.4 million pesos in 1996 (projection for the year based on the trend to November), for growth averaging 18 percent over the last five years. The factors driving this increase include: 1) a 2.2-fold increase in the number of residential customers, which make up 45 percent of the total, over this period; 2) rate hikes; and 3) an increase in the number of industrial and commercial customers.

However, the net operating margin increased from 7.7 million pesos to 8.5 million pesos(estimated) over the same period, for a growth rate of only 10.3 percent. Since inflation averaged about 7 percent over this period, earnings in effect declined.

Revenue and Margin — Unit (One million peso: %)

	1991	1992	1993	1994	1995	1996(※)
1.Utility Operating Revenue	77.3	95.3	108.1	126.2	147.6	175.4
2.Power Cost(from NPC)	51.4	65.1	72.4	84.0	104.6	123.4
Cost of Power %	66.49	68.31	66.60	66.56	70.86	70.52
3.Non-Power Cost	15.7	20.2	20.4	21.8	32.4	32.1
Non-Power Ratio %	20.31	21.19	18.87	17.27	21.95	18.30
Administrative & Gen.	6.1	7.5	8.0	8.3	12.4	16.2
Consumers Accts. Expenses	5.7	6.7	7.4	7.7	9.1	7.9
4.Total Operating & Maint. Expenses	67.1	85.3	92.9	105.9	137.1	155.8
Total Expense Ratio %	86.80	89.50	85.93	83.91	92.88	88.25
5.Operating Margin	10.2	10.0	15.2	20.3	10.4	19.6
Ratio of Operating Margin %	13.10	10.40	14.00	16.00	7.00	11.10
6.Depreciation	1.5	2.0	2.5	3.2	3.8	5.0
7.Interest Expense	0.8	2.7	3.9	5.2	6.1	6.3
8.Net-Operating Margin	7.7	5.2	8.7	11.8	0.5	8.5
9.NET MARGIN	8.1	6.3	10.1	13.6	2.5	9.8
10.Cash-Flow(6+8)	9.6	8.3	12.6	15.8	6.3	14.8

※ Figures is estimated on the annual base by November 1996.

The operating margin, which indicates the earnings disposition, improved from 13.1 percent in 1991 to 16.0 percent in 1994, but dipped to 11.1 percent in 1996. The following may be cited as factors in the decline in earnings.

(1) The cost of power per kWh rose from 1.58 pesos in 1991 to 2.11 pesos in 1996, for an increase rate of 33.5 percent. By contrast, the unit price applied in sales rose by only 19.6 percent, from 2.86 pesos to 3.42 pesos. Consequently, because of the increase in the cost of purchase from the NPC, power costs rose by 66.5 percentage points in 1991, 70.9 in 1995, and 70.5 in 1996.

(2) Overall, non-power costs are in decline thanks to the rapid growth of revenue. However, the increase rate for administrative and general expenses rose from 6.1 percent in 1991 to 16.2 percent in 1996. The corresponding rate for consumer accounts hit 7.9 percent, up 2.2 percentage points from 1991, due to the rise in revenue recovery costs because of the expansion of customers.

(3) There has also been a substantial rise in the burden imposed on revenue by interest paid and depreciation costs. Along with the increase in facilities, the rate of revenue burden imposed by depreciation costs increased from 1.5 percent in 1991 to 5.0 percent in 1996. As percentage of revenue, the level of interest paid jumped from 1.0 percent in 1991 to 3.5 percent in 1996 along with the increase in borrowing from the NEA.

(4) Over the same period, the system loss rate improved by two percentage points, from 15.5 percent to 13.5 percent, but this was not enough for a significant boost in earning power.

The drop in earnings in 1995 was caused by the decrease in revenue and increase in facility improvement and repair costs due to outages occasioned by typhoons. Typhoons are more of a factor of cost increase among the ECs of Leyte and Samar than among counterparts in other regions. Even at Leyeco V, which is in a financially sound position, long-term loans from the NEA reached 102.1 million pesos, equivalent to 74.0 percent of the total assets, in 1992. The corresponding total for 1996 (as of the end of November) was 94.4 million pesos, or 49.4 percent as high as the total assets, for an improvement of 24.6 percentage points. However, the loan dependence rate was still on the order of 50 percent, which cannot be termed favorable. It should be added that Leyeco V's equity ratio has improved and reached 26.5 percent in 1996.

Ratio of LT Debt and Equities Ratio (Peso-One million)

	1992	1993	1994	1995	1996(Nov.)
Long-Term Debt (NEA Cost. Loan)	102.1	97.8	95.1	92.2	91.4
Total Liabilities & Equities(Members)	137.8	148.9	157.9	173.5	190.8
Ratio of LT Debt %	74.0	65.6	60.2	53.1	49.1
Equities	15.9	27.8	43.3	42.0	50.6
Equities Ratio %	11.5	18.6	27.4	24.2	26.5
Utility Property	56.6	57.2	67.9	82.8	91.6

Over the last four years, the facility investment of 49.5 million pesos was matched by the cash flow, such that it was essentially possible to defray the former with the latter.

4.4 Problems in EC Accounting

(1) Need for auditing by external certified public accountants

The various ECs financial statements (including balance sheets, profit and loss statements, and fund management statements) are audited by external certified public accountants (CPAs), but its credibility is low. At some ECs, have low credibility that fixed assets of hydro-power plant is eliminated from the balance sheet and insufficient reserves for bad account receivable, that is inadequate. In some cases, appropriate accounting procedures have not been followed.

Furthermore, the CPAs must belong to an accounting corporation (partnership) to ensure that certain standards are maintained in the execution of the accounting. Such a partnership may be exemplified by Sycip, Gorres & Velayo *(SGV), which is employed by Leyeco V. Employment of private (non-corporate) CPAs results in greater variation in respect of the auditing procedures and appraisal.

(2) Distortion of on-term profit by arrears in interest payable and loan repayments

A major problem in this connection is the high level of borrowings relative to income. As percentage of income, the outstanding balance of loans is in the range of 50 - 60 percent at Leyeco II, Leyeco IV, and Leyeco V, and this is a suitable level. By contrast, when it exceeds income, debt has a serious impact on management. There are extremely heavy burdens of debt at ECs where borrowings are over twice as large as income. The specific levels as multipliers of income are 2.6 at Soleco, 2.8 at Esamelco, 2.0 at Norsamelco, and 1.8 at Samelco II.

Similarly, interest payable is said to cross the crisis line when it exceeds 3 percent of income. This is the case at seven of the 11 ECs.

Problems in the accounting aspect

Low credibility of auditing	The various ECs financial statements are audited by external certified public accountants (CPAs), but its credibility is low. Preparation of statement of accounts by external CPAs (1) Auditing by an auditing partnership that maintains a fixed set of standards (2) Great variation in individual (non-corporate) auditing depending on the CPA
Arrears in interest payable and loan repayment	Two ECs are way behind the initial schedule not only in their repayment of borrowings from the NEA but also in interest payments. Arrears in interest payable result in a corresponding apparent increase in the on-term profit because of the lower interest payment. As such, comparisons with other ECs must make revisions for arrears.
Uncollectable claims	The ECs have set up reserves for bad account receivable, but some of them are nevertheless saddled with bad receivable that cannot actually be recovered.
Handling of mini hydropower	(1) In 1995, the mini hydropower plant in Southern Leyte was put out of operation by a fire. Reinauguration of this plant is reportedly difficult, partly because of structural problems. The EC should consider writing off the plant as a special loss. (2) The mini hydropower plant now in operation in Eastern Samar should immediately be included in the portfolio of EC fixed assets.
Rehabilitation standards	About 5 percent of income should be posted in PL statements as rehabilitation cost. Some ECs are posting it in equity statements as customer contribution in aid of construction.

Borrowings and arrears in interest payable and loan repayments

(1996 basis; unit: millions of pesos, percent)

	Borrowings	Borrowings /income	Interest payable	Interest payable /income	Interest rate	Borrowing rate	Interest payment arrears	Loan repayment arrears
	millions of pesos	%	millions of pesos	%	%	%	month	millions of pesos
LEYECO I	51.2	90.6	1.0	1.7	1.95	78.5	9.9	4.5
LEYECO II	97.7	45.1	2.1	0.9	2.14	50.1	(3.1)	(2.1)
LEYECO III	36.3	107.3	1.4	4.1	3.85	58.9	17.1	7.0
LEYECO IV	30.4	58.0	2.4	4.5	7.89	48.5	0	0
LEYECO V	94.4	53.8	6.3	3.6	6.67	49.4	3.0	0
SOLECO	151.6	265.0	2.7	4.7	1.78	89.7	84.0	16.7
BILECO	73.4	275.9	3.0	11.3	4.08	80.0	30.4	1.8
SAMELCO I	83.4	145.2	1.0	1.7	1.19	67.4	(2.5)	1.0
SAMELCO II	136.5	186.9	6.0	8.2	4.39	88.1	(13.0)	28.9
ESAMELCO	135.9	284.9	5.2	10.9	3.82	83.8	37.2	13.0
NORSAMELCO	99.9	208.1	3.2	6.6	3.20	80.1	73.8	10.4

Note 1: Figures are based on annualized estimates. However, figures for borrowing amounts and total capital employed are based on the latest EC data. Reference was made to financial statements as of the end of October 1996 for E. Samar and Samar I, the end of December 1996 for Samar II and Biliran, and the end of November 1996 for the other ECs.

Note 2: In the columns for arrears in interest payable and repayments, figures in parentheses indicate early repayment.

In fact, there are significant arrears in repayment of borrowings from the NEA and in interest payable. The only ECs at which repayments are proceeding on schedule are Leyeco II (where both loan and interest repayments are ahead of schedule) and Leyeco IV. Ordinarily, loans from the NEA apply a term of 25 years and an interest rate of 12 percent. The term for enterprises engaged in restructuring is 35 years, but this does not constitute a fundamental solution, because the longer term increases the amount of repayment.

In the accounting aspect, many ECs are behind in their interest payments. For this reason, figures for on-term interest payable tend to be low, and this leads to an apparent rise in on-term profit. In other words, some ECs may be regarded as using arrears in interest payable to manipulate profit figures. This also makes it impossible to perform simple comparisons of EC financial statements. Under proper accounting standards, it is preferable to make interest payments as scheduled and to allow the resulting net deficit of finances and drop in net assets (equity). Because of funding difficulties, many ECs are falling behind in their repayment of loans which are coming due in addition to being at arrears in interest payable. The amount of arrears in loan repayments exceeds 10 percent of the borrowings at four ECs, including Leyeco III and Soleco.

Part of the costs of interest payable and other financing are figured into the power sales price.

However, it is difficult for ECs to hike this price by a great margin, for the following reasons: 1) the price is already considerably high, and 2) the authority for final determination of price hikes lies with the ERB.

(3) Shortage of reserves for irrecoverable claims

As noted above, the ECs have established bad claim reserves for recovery of uncollectable customer accounts. However, at some ECs (for example, Samelco I and Soleco), the actual result is a bad claim loss. The actual bad claim rate is 14.0 percent at Samelco I and 19.4 percent at Soleco. In this way, there are some cases in which standards vary depending on the EC.

Interviews conducted at Leyeco IV revealed the presence of other financially detrimental practices in this area. To hold down the amount of irrecoverable accounts, enterprises should automatically terminate service to customers who have not paid their electricity bills for three months at the least. Among the ECs, however, there are cases in which service continued for 10 or 12 months without bill payment. This practice expands the amount of bad claims.

Actual bad claim loss

1996 (thousands of pesos)

	SAMELCO I	SOLECO
Cons. Acct. Rec.	7,368	NA
Allo. For Uncoll. Accounts	233	NA
Net Cons. Acct.Rec. - Energy	7,135	5,138
Actual bad claim loss (estimated)	1,000	1,000
Actual bad claim loss rate	14.0	19.4

(4) Improvement of the handling of mini hydropower facilities in accounts

Soleco invested 32.9 million pesos in the construction of a mini hydropower plant in 1983. This plant had generated 402,000 kWh yearly and occupied about 4 percent of the total income. However, it was damaged by fire in 1995 and is no longer in operation. The generation cost per kWh at this plant was 0.358 pesos, much lower than the price of 1.904 pesos applied in purchase of power from the NPC. It will reportedly be difficult to restart this plant, which also has structural problems.

The current book value of this facility is 23.3 million pesos, and some 14 million pesos were borrowed from the NEA for it. The plant has seven employees and annual personnel expenses of 0.34 million pesos, and the interest payable on the loan from the NEA comes to 2.0 million pesos. The shutdown has increased the cost burden by 4.8 million pesos, including 2.5 million pesos for power purchase from the NPC.

The plant is regarded as practically irreparable, and therefore should be written off. At present, it is posing a problem in EC accounts.

A mini hydropower plant was also constructed by Esamelco in 1990 at a cost of 22 million pesos. This facility is currently in operation and generates 1.1 MWh a year, representing 4 percent of the total income. During its construction, there arose a dispute with a local construction company about payment of wages to the construction workers. This dispute appears to have prevented formal transfer of the facility.

Nevertheless, the facility is in operation and the personnel expenses associated with its staff of three (25,000 pesos per month) are figured into prime cost. Naturally, the income from it is included in sales revenue. However, the facility itself is not yet counted as part of the fixed assets of Esamelco. Interest payments have stopped on the loan of 40 million pesos from the NEA. The facility in question should immediately be included in the EC fixed assets. It goes without saying that, as one of the fixed assets, it should also undergo depreciation.

(5) Characteristics in the management aspect

Well-performing ECs	ECs in trouble
* Talented management corps led by the general manager (GM), with keen concern about management efficiency, the balance between borrowings and income, and maintenance of the income and expenditures balance * Early repayment for amortization, low interest burden * Favorable business environment; presence of medium and small industrial and commercial customers * High rate of electrification, low burden of additional investment * Auditing by external CPAs	* Insufficient management talent * High proportion of residential customers, low management efficiency * Very high ratio of borrowings to income and low cash flow * Many deferments of costs in accounting * Late detection of management problems due to improper accounting procedures * Delay in recovery of funds * Presence of bad or idle assets

It is inevitable that the earning power of ECs varies with differences in the business environment. However, ECs which make a greater effort in management and concentrate on financial position, and particularly the balance between borrowings and income, possess higher

earning power.

4.5 Promotion of EC Cowork by USAID

In 1996, the United States Agency for International Development (USAID) executed a project concerning transfer of control of 69 kV transmission line facilities and improvement of the management of ECs on Mindanao island. In the context of this project, USAID made suggestions and comments in several areas, as follows.

(1) Development of a computer system for billing and collection

It is vital for ECs to issue accurate written bills to customers and to collect the proper amount of payment from them. The low efficiency in performance of these tasks worsens the management of funds and expands bad accounts receivable. It also accounts for a large share of non-system loss. Through the project, USAID developed a system of billing and collection that harnesses personal computers. The number of ECs participating in the project was high at first but eventually decreased to six. The project revealed the following problems.

A. EC employees had to be trained to use personal computers.

B. It was impossible to consign billing and collection to individual companies.

C. Consignment of system support and maintenance to a foreign-affiliated accounting office was considered but not undertaken due to the cost.

D. Maintenance entailed particular difficulties, resolution of which is a task for the future.

In spite of these problems, many ECs have introduced computerized systems of billing and collection. The smooth issuance of bills by personal computer has led to an improvement in recovery of payments for bad accounts receivable. In addition, some ECs have begun to terminate service if payments are more than three months overdue. However, there have also been many cases in which customers with the will to pay have had their service terminated because of deficiencies in the former billing system. Recovery of payments is also being improved by the introduction of new collection schemes.

(2) Reduction of costs through joint purchase of supplies by ECs

The USAID project also proposed joint purchase of supplies by ECs. The participating ECs joined together to purchase inventories, and particularly imported materials. Blanket purchase in large quantities succeeded in lowering costs. The ECs also jointly purchased spare parts for repair use and set up a joint venture for the same. There was also some discussion of cowork frameworks for sharing of management know-how, but this did not make much headway.

(3) Other points

The USAID also made the following observations through the project.

A. There exists some question about who is the real owner of cooperatives

Because the ECs are cooperatives, their shareholders are subscribers and users. In voting, however, subscribers with a single share have the same voice as those with 100. And in the 1980s, the NEA assumed the burden of many old loans. If part of these loans had been converted into capital, the NEA would become part owner. Similarly, parties who make capital subscription to cooperatives qualify as owners. At present, it is unclear which party is responsible for management. The NEA may be regarded as the EC owner in effect because: 1) it selects the EC managers and 2) it has the authority for financing.

B. ECs with poor performances are behind in repayment of loans

Unless the national government writes off their unpaid debt, ECs will not be able to procure funds from overseas sources. Many ECs have very low equity ratios and a loan dependency in excess of 70 percent. Some are two or three years behind in making repayments to the NEA. This situation would rule out direct procurement of overseas funds.