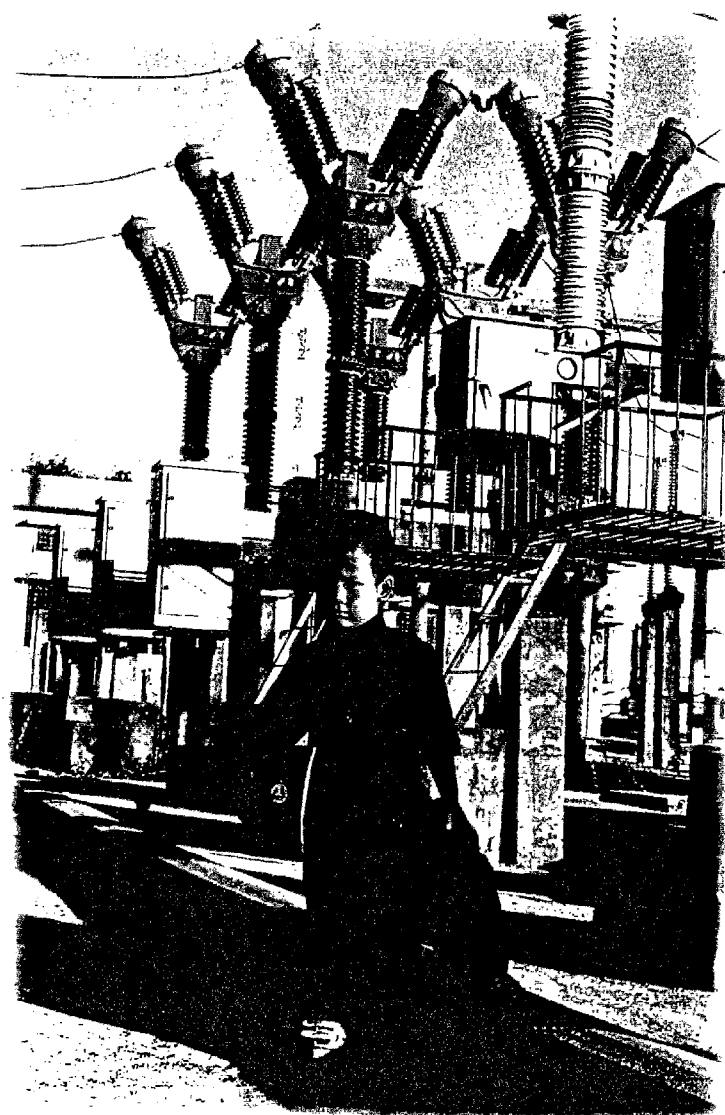


# ELECTRICITY OF VIETNAM



*We strive for a brighter future*

1998



**Our mission is to meet  
the power demand of all customers  
with ever higher quality and better services**

**ELECTRICITY OF VIETNAM**

**ELECTRICITY OF VIETNAM  
MOVES FORWARD ALONGSIDE  
THE COUNTRY**



Electricity of Vietnam (EVN) was established at an important moment when the Government initiated the policy of setting up large corporations in achieving maximization of integrated advantages of key industries within the national economy. The establishment of EVN was an important milestone in the development of Vietnam's Electric Power Sector as well. EVN functions in a new Government-regulated market-based economy that signifies a change from the State-funded centrally planned economy of the past. While EVN has only existed for three years, it has proven its key position in the country's industrialization and modernization process and has fulfilled its responsibility to the Party and the Government.

I am very pleased that in EVN's three years of operation, it has performed remarkably well in the face of difficult conditions and large obstacles: total electricity production increased from 14.636 billion kWh in 1995 to 17.105 billion kWh in 1997, reaching an annual averaged growth rate of 14.39%. The electric power consumption per capita in the country increased by 25% to 250 kWh in 1997. Although there are still many difficulties in developing and mobilizing generation sources, in general, the Electric Power Sector has satisfied the country's basic demand for electricity.

Notwithstanding the fact that EVN has just recently changed to applying self-financing accounting principles, it has generated profits and made sufficient contribution to the Government budget over the past three years. Income levels of EVN's personnel have not only become stable, but have also increased. In 1998, due to severe hydrological conditions, there was not sufficient water at the hydro power stations, therefore, thermal and diesel generation was utilized, thus, increasing electricity costs. In these difficult times, EVN has taken all possible measures to satisfy the customers' demand for electricity, minimizing the possible negative impact on the country's economic development.

In the upcoming period, EVN's tasks are still very difficult. New challenges, both internal and external, require EVN to develop new and creative strategies for optimum levels of production and business development. The impact of the regional financial crisis will be substantial, affecting GDP growth rates and investment flows into Vietnam. It is forecast that GDP growth rate will only be of 6-8% during the period from now until the year of 2005. Government support to the power sector will decrease, capital mobilization for investment and development purposes will be more difficult, and revenues from electricity sales will fall, due to an inevitable slow down in production and consumption and due to currency devaluation. In addition, the Party and Government have given EVN new challenges to meet. According to the Eighth Party Congress decisions, by the year of 2000, 100% of communes, 80% of villages and 60% of rural families should have access to electricity, power price should be reduced for people in rural areas to assure a more equitable society; EVN's customer service activities should be reformed and developed, and corruption in customer service areas should be eliminated.

EVN's first three successful years should be recognized. However, big challenges await them in the future. But with its strong tradition, work ethic, creativity, dynamism and flexibility, EVN will overcome the challenges it faces and move forward as Vietnam moves forward.

**Thai Phung Ne**  
Member, Party Central Committee  
Vice Minister, Ministry of Industry

## EMPLOYEES - OUR STRENGTH



1997 marks the success of the efforts of Electric Power Sector for satisfying the electricity demand of the nation. The tangible achievements of the last three years have proven the Party and Government's decision to develop Electricity of Vietnam (EVN) as one of the strong pillars for Vietnam's development correct and timely.

### Generation and network expansion

In order to guarantee adequate electricity for satisfying the requirements for growth of consumption by social and economic sectors, EVN has properly implemented the plan for generation expansion endorsed by the Government. Numerous projects have been put in operation, such as Phu My 2.1 and the Can Tho power plant extension that add generation capacity to the generation mix for the southern Vietnam. By the end of 1997, total installed capacity of EVN's system was 4,982 MW that is a result of an annual increase of 200 MW. In parallel with the construction and development of generation sources for the short-term use, EVN currently concentrates its efforts in quickly implementing critical projects such as Yali, Song Hinh and Ham Thuan - Da Mi hydro power plants. It has executed the contract and started the construction of Pha Lai 2 thermal power plant. EVN has been negotiating with IPPs and BOT power plants for the purchase of electricity while developing its own power generating sources in order to diversify its generation mix to satisfy the demand for electricity and reduce the burden of capital investment.

To develop generating capacity in accordance with the development of T&D systems, refurbishment and upgrading of urban networks, and initial electrification of rural areas, by the end of 1997, EVN has newly built and put in operation totals of 91,297 km of power lines and 24,373 MVA of substation capacity of different types, an increase of 21,344 km of power lines and 6,808 MVA of substation capacity as compared to 1995.

### Electricity production and supply

Last year, under the slogan of "everything for electricity, everything for the industrialization and modernization of the country", EVN, having thoroughly understood the load forecast, production and delivery capabilities of the system, developed appropriate approaches to mobilize generating capacity for quick reactions to the unfavorable conditions that arose. Therefore, the high growth rate of electricity demand has been satisfied. 1997's power sales was 15,302 million kWh, an increase of 16.9% compared with 1996 figures. In the past couple of years, EVN has implemented many effective measures to reduce electricity losses and regulate load pattern, thus resulting in the reduction of T & D losses from 21.4% in 1995 down to 18.2% in 1997, which is lower than the Government's benchmark.

With the aim to further expand activities and to serve customers better, EVN has supplied electricity from national power grid to 100% of provinces and 70% of villages in the country.

### Results of business and financial activities

In 1997, EVN has preserved and expanded the invested capital base for business purposes and improved the efficiency of capital utilization. Since the date of its establishment, EVN has always been profitable and has contributed to the Government's budget. The current profit/sales ratio stands at 14.35% and the profit/assets ratio is 7.34%.

EVN's achievements in 1997 were very substantial. However, on the road ahead of us, we will have to face new challenges.

### Advantages

- The direct and close guidelines of the Party, Government, ministries and central organizations; the strong support from people and provincial, cities' municipalities for the power sector
- Experiences gained during the past three years in the fields of management and production within the whole sector's accounting structure.
- Managers of EVN and its subsidiaries are knowledgeable, dynamic and believe in the Party's guidelines and Government's policies.
- The employees are hard working and disciplined.

ELECTRICITY OF VIETNAM



### Challenges

- To meet the ever-increasing demand for electricity requires large amounts of capital investment for system expansion. It is estimated that investment capital needed for generation and network development in the upcoming years will be in the range of 1 to 1.5 billion USD/year. It is very difficult to attract such a large amount of investment fund.
- Current power tariffs would not allow EVN to become a self-financing entity. It is required that power tariffs be increased to guarantee EVN's borrowing and repaying its loans properly. However, it is difficult to increase the power tariffs due to current low level of peoples' income
- The hydroelectric share in generation mix is still high that depends largely on weather conditions, causing difficulties in generation sources management.

I believe that with the solidarity and agreement among all EVN's employees, we will take advantage of these opportunities and overcome these challenges to accomplish our strategic task for the upcoming years - to provide sufficient electricity for the country's industrialization and modernization objectives.

Dao Van Hung  
Chairman, Board of Directors

**Our objective is to become  
an advanced, modern and competitive  
power utility in the region.**

**ELECTRICITY OF VIETNAM**

**CUSTOMERS - OUR REASON FOR BEING**



To satisfy the requirements of the country's renovation process, Electricity of Vietnam (EVN) was established in 1995 pursuant to Decision No. 562/TTg dated 10/10/1994 and operates according to the Charter issued by the Government in the Decree No. 14/CP dated 27 January 1995. The establishment of EVN, a powerful industrial corporation responsible for the management, operation and development of the entire country's power system has created new advantages for the Power Sector to become a key industry that serves to supply power for the country's industrialization and modernization.

Although EVN has struggled through the transition from a subsidized to self-financing corporate structure, it has matured and gradually satisfied the country's ever-increasing demand for electricity. Statistics show that during the past three years, electricity generation was up by 30% from 14.636 billion kWh in 1995 to 19.140 billion kWh in 1997. It is forecast that in 1998, electricity generation will be 21.294 billion kWh. In addition, power consumption per capita has grown up from 200 kWh in 1995 to 275 kWh in 1998.

To meet the load growth, a number of new power plants have been put in operation, while other projects are under construction, development and investigation stages. Besides power plant projects, the power network is also being improved, upgraded and expanded to serve the customers with electricity of better quality. Currently, there are 10,317 km of transmission lines of 66 kV and up to 500 kV, and 10,032 MVA of high voltage transformers capacity, 80,926 km of distribution lines of up to 35 kV and 14,341 MVA of low voltage transformers capacity. The electric power network has arrived 100% of provinces and cities, 93% of communes and 73% of villages throughout the country.

Besides these achievements, EVN still has many areas that need improvement to better serve its customers. It must accelerate investment and development activities to meet the demand growth. It must renovate the customer service sector by providing our customers with better and timely services and simplified procedures that satisfy their highest expectation.

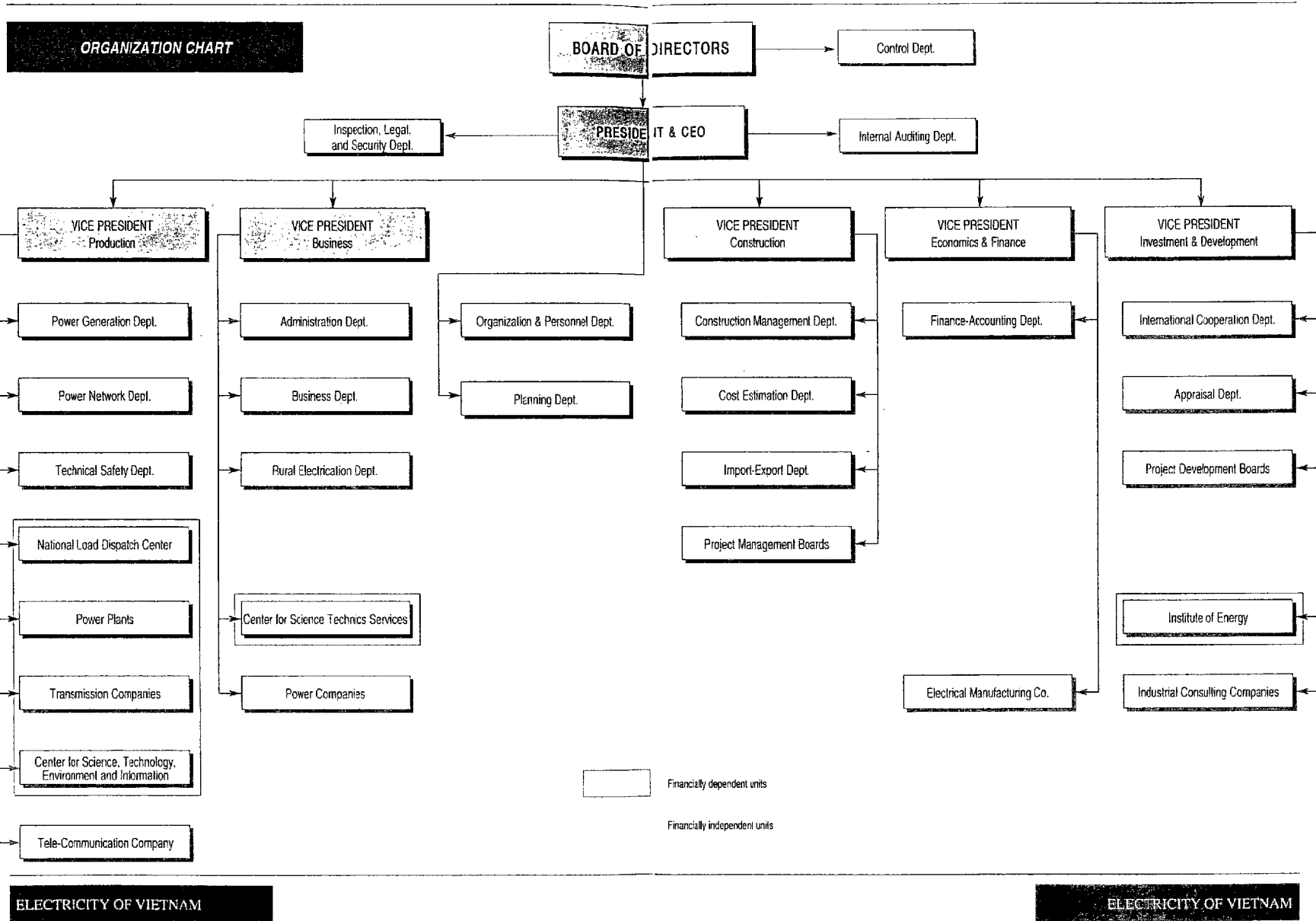
It is forecast that during the period from 1995 to 2000, growth rate for power consumption will achieve 14 - 16% per annum. That means each year an additional 500 - 600 MW of new capacity is required to be put in operation. However, due to delayed implementation schedule of the projects, only 600 MW has been added to the system within the last three years (in average 200 MW per year), forcing the power system to operate in difficult conditions without reserve capacity, and ultimately resulting in decreased reliability, stability and safety of power supply.

In the remaining years of this millennium, there will still be difficulties associated with power supply. The power system will still lack sufficient reserves to meet the country's demand. Load shedding measures may have to be applied. It is imperative that our customers use electricity wisely and efficiently and express their sympathy to the Power Sector.

In the future, EVN's basic strategy includes accelerating investment and development, modernizing technology and upgrading business and customer service activities. We believe that with customer's support and cooperation, EVN will fulfill its functions of serving our customers better and better and confidently steps to the 21st century alongside our Country.

**Hoang Trung Hai**  
President & CEO

**ELECTRICITY OF VIETNAM**



**Board of Directors**



**Mr. Dao Van Hung**  
Chairman



**Mr. Tran Dinh Long**  
Vice Chairman



**Mr. Le Liem**  
Standing Member

**Board of Management**



**Mr. Hoang Trung Hai**  
President & CEO



**Mr. Tran Viet Ngai**  
VP, Construction



**Mr. Tran Quoc Anh**  
VP, Business



**Mr. Dang Hung**  
VP, Production



**Mr. Dinh Quang Tri**  
VP, Finance



**Ms. Pham Thi Ly**  
Chief Accountant



**Mr. Truong Bao Ngoc**  
President's Advisor  
Investment & Development



**Mr. Bui Thuc Khiel**  
President's Advisor  
Production



**Mr. Pham Van Vy**  
President's Assistant





Mr. Phung Van Bao  
Chief Administrator



Mr. Le Quang Khue  
GM, Organization &  
Personnel Dept.



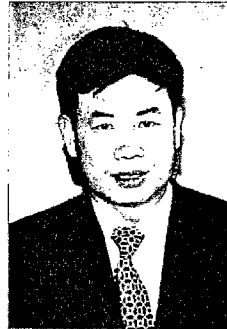
Mr. Tran Vinh Linh  
GM, Planning Dept.



Mr. Tran Minh Kham  
GM International  
Relationship Dept.



Mr. Luong Van Dai  
GM, Appaisal Dept.



Mr. Nguyen Tu Thanh  
GM, Import-Export Dept.



Mrs. Hoang Thanh Phuong  
GM, Cost Estimation Dept.



Mr. Khuong Van Cay  
GM, Construction Dept.



Mr. Tran Van Duoc  
GM, Power Generation Dept.



Mr. Trinh Kim Hung  
GM, Network Dept.



Mr. Dao Thanh Hoai  
GM, Business Dept.



Mr. Nguyen Tan Loc  
GM, Rural Electrification Dept.



Mr. Dang Phan Tuong  
GM, Internal Auditing Dept.



Mr. Dang Huu Ngo  
GM, Technical Safety Dept.



Mr. Nguyen Mau Chung  
GM, Inspection, Security &  
Regulation Dept.

**ELECTRICITY OF VIETNAM**

## HISTORY OF THE ESTABLISHMENT AND DEVELOPMENT OF EVN

Vietnam's electric power industry was founded on August 15, 1954 with a petty inheritance from the French - a total system capacity of less than 100 MW and total annual electricity generation of about 180 million kWh. There were only a few, limited capacity plants such as Cua Cam, Thuong Ly (Hai Phong), Coc Nam (Quang Ninh), Bo Ho, Yen Phu (Hanoi), Cho Quan (Sai Gon), Vinh (Nghe An)... that supplied electric power through a simple power network system with a maximum voltage level of just 30.5 kV. This system only met the local demands of those areas.

With the diligence and hard work of Vietnam's workers, the Vietnamese energy sector has grown gradually to be one of the leading industries in the country's industrialization and modernization. The Vietnamese energy sector's development is closely tied to the development of the Country.

### From 1954 to 1975

The development of the power sector was seriously affected during the American war. The country was divided by North and South, and at this time, the North mobilized the potential power of the sector by establishing the Power Department, the initial name for Electricity of Vietnam. The main task of Power Department during this period was to renovate and overhaul power plants left by the French in order to quickly mobilize resources to provide the essential foundation for a strong socialist republic. A number of new plants were built during this period of time, namely, Viet Tri, Thai Nguyen, Ha Bac and Uong Bi with the latter being the largest one at the time with a capacity of 153 MW. The power network was also expanded noticeably. Hundreds of 110 kV lines and thousands of 35 kV inter-provincial lines were built. The majority of new projects were built before 1965.

From 1965 to 1972, many power plants were damaged due to the destruction war by Americans. Vietnam's power sector maintained its honorable tradition and made a rapid recovery and continued to develop to serve the country's post war recovery. By 1975, in Northern Vietnam, a total of 451 MW of system's capacity and a total generation of 1264 million kWh had been achieved.

In the South, during the period of 1954 - 1975, several power plants were built including Da Ninh hydro (160 MW), Thu Duc thermal and Suoi Vang hydro extension. The power network was developed based on 230 kV, 66 kV and 15 kV voltage levels. Up to 1975, Southern power system had 849 MW of installed capacity and 1495 million kWh of annual generation.

### From 1975 to 1995

In 1975, the country was unified, and the period from 1975 to 1995 demonstrated the power of socialist unification. As the power sector was a key industry in the reconstruction of the country, the Government has allocated a significant amount of budget to continue investment in the power system. Numerous modern power stations were built during this period, namely Pha Lai (440 MW), Hoa Binh (1920 MW), Tri An (400 MW), Ba Ria (200 MW), Thac Mo (150 MW). The transmission and distribution network was expanded throughout the entire country as well.

However, up until 1994, Vietnam's power system remained separated into three operationally independent systems which were controlled by three respective regional power companies: Power Company No. 1 in the North, power company No.2 in the South and Power Company No.3 in the Center. In 1994, a newly-built 500 kV transmission line connected those three systems into a single unified system that operates under the National Dispatch Control Center's command located in Hanoi.

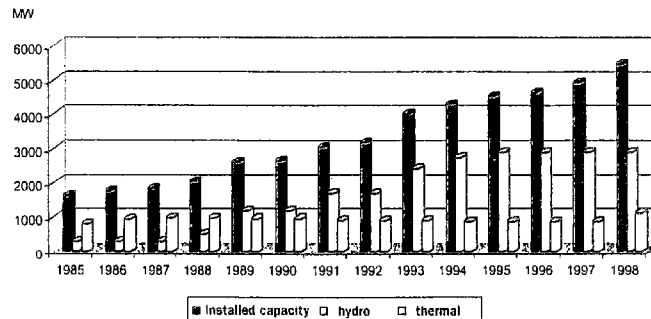
### From 1995 up to now

The establishment of Electricity of Vietnam on 27th January 1995 unified the sector's management throughout the country and optimally mobilized resources from three regions for both the construction and development of the power sector and for the industrialization and modernization of the country. Thanks to the Government's open-door policy, a number of projects have been constructed over the past three years with financing from international lending institutions. According to the forecast, by the end of 1998, total system's capacity will reach 5,335 MW and power generation and sales will reach 21,294 billion kWh and 17,902 billion kWh, respectively.

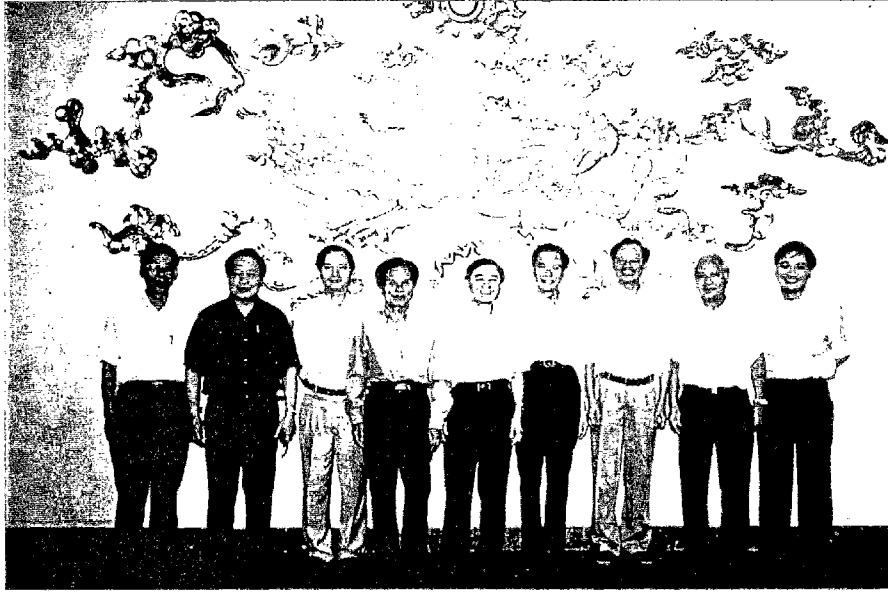
For their 40 years of achievements, the Vietnamese power sector was awarded with Ho Chi Minh Medal of Honor. Vietnam Power Sector's 12 entities and individuals were cited Hero of Labor, many others have received honorable titles and gifts from the Party and State.

As new and difficult challenges face the nation, the Vietnamese power sector, with its tradition of quality and strength and its hardworking and creative cadres will overcome the difficulties and step firmly into the future.

GENERATION CAPACITY OF VIETNAM POWER SYSTEM  
FROM 1985 - 1998



ELECTRICITY OF VIETNAM



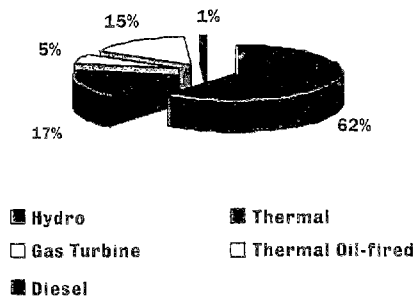
*From left:* Mr. Trương Bảo Ngọc, former VP; Mr. Trần Việt Ngai, VP; Mr. Đào Văn Hùng, Chairman of the Board of Directors; Mr. Nguyễn Sĩ Phong, former member of the Board of Directors; Mr. Vũ Ngọc Hải, former Minister of Energy; Mr. Thái Phùng Ne, Vice Minister of Industry, former Chairman of the Board of Directors; Mr. Lê Liêm, member of the Board of Directors, former EVN's President & CEO; Mr. Bùi Thúc Khiet, former VP; Mr. Hoàng Trung Hải, EVN's President & CEO.

## ELECTRICITY OF VIETNAM STRIVES FOR A BRIGHTER FUTURE

Electricity of Vietnam (EVN) is a state-owned corporation that operates in the areas of generation, transmission, distribution and sales of electric power.

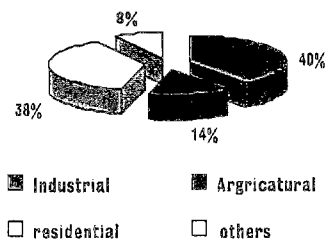
By the end of 1997, EVN had 13 large and medium-sized power plants, dozens of small diesel and minihydro stations. Total installed capacity was 4,982 MW. 1997's generation was 19.151 billion kWh including 11.677 billion kWh of hydro electricity which shares 61.97% of generation mix, 3.324 billion kWh of coal-fired power generation which accounts for 17.36% of generation mix, 3.927 billion kWh of gas-turbine power generation which contributes 20.51% to generation mix and 233 million kWh of diesel power generation, or 1% share in the generation mix.

### POWER GENERATION BY TYPES OF POWER PLANTS



There are currently five power companies that sell electricity to the customers. Three of them are regional ones (Power Company Nos. 1, 2, 3) and the other two are of cities (Hanoi's Power Company and HoChiMinh City's Power Company). These five power companies control electricity supply to provinces, districts and communes which then manage the operation and maintenance of distribution network and the selling of electricity to 2,492,000 customers. 1997's commercial sales was 15,302 billion kWh including 6,163 billion kWh of industrial use, 2,081 billion kWh for agricultural purposes, 5,830 billion kWh of residential consumption and 1,228 billion kWh for the service sector and others.

### POWER SALES BY TYPES OF CUSTOMERS



Beside the core business of production and sale of electric power, EVN's other businesses are also significant. There are four entities that function as consulting arms for EVN, namely: the Institute of Energy, Power Investigation Companies Nos. 1, 2 and the Energy Center. Consulting services provided include designing of Master Plans for the Power Sector's development, planning for the development of regional network and consulting services for EVN's clients, such as survey, investigation, design and construction supervision for different power projects (hydro, thermal, gas-turbine, diesel power plants and power lines of up to 500 kV).

In order to accomplish the tasks of producing and selling electricity to meet the demand of various national economic sectors, during the period of country's industrialization and modernization, EVN has been investing in a number of power plants, network and substations using diversified sources of financing. Total investment capital in 1995 was 2,344 billion VND, in 1996 - 4,520 billion VND, in 1997 - 8,088 billion VND. Investment planned for 1999 will be 13,600 billion VND. It is estimated that during the period of 1999-2000, annual investment will be approximately 13,000 billion VND, 50% of which comes from debt financing.

### Vietnam Power System's installed capacity:

By the end of 1997, total EVN's installed capacity was 4,936 MW including 13 large power stations and some small hydro and diesel units. They are:

Hydro power stations:	2,892.5 MW
Hoa Binh	1920 MW
Thac Ba	120 MW
Thac Mo	150 MW
Vinh Son	66 MW
Tri An	400 MW
Da Nhim	160 MW
Small hydro units	56.5 MW

### Thermal coal-fired power plants: 645 MW

Pha Lai	440 MW
Uong Bi	105 MW
Ninh Binh	100 MW

### Thermal oil-fired power plants: 198 MW

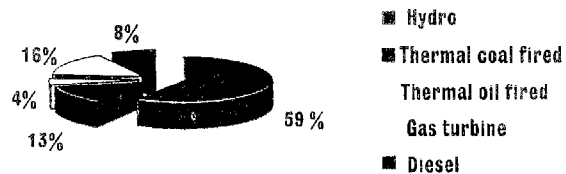
Thu Duc	165 MW
Can Tho	33 MW

### Gas Turbine power plants: 797.2 MW

Ba Ria	271.8 MW
Phu My	288 MW
Can Tho	75 MW
Thu Duc	128.4 MW
Thai Binh	34 MW

### Diesel units 397 MW

### GENERATION CAPACITY MIX



ELECTRICITY OF VIETNAM



## Technologies utilized in the power plants:

### Hydro Power Plants:

Low water head: Hoa Binh, Thac Ba, Tri An.

High water head: Thac Mo, Da Nhim, Vinh Son

The hydro power plants are of different levels of automation and technology utilization. Some of them, such as Vinh Son power plant, are highly automated. Others, such as Hoa Binh plant, use one of the most state-of-the-art excitation system. However, many power plants still use outdated technology from the sixties. In the future, these plants will be upgraded and replaced with modern equipment.

### Thermal power plants:

Coal-fired: coal ejection boilers, high-pressure turbines. Only Ninh Binh plant has medium pressure turbine.

Oil-fired: small sizes, medium pressure boilers. The equipment is old and outdated, needs to be upgraded and modernized.

### Gas turbines:

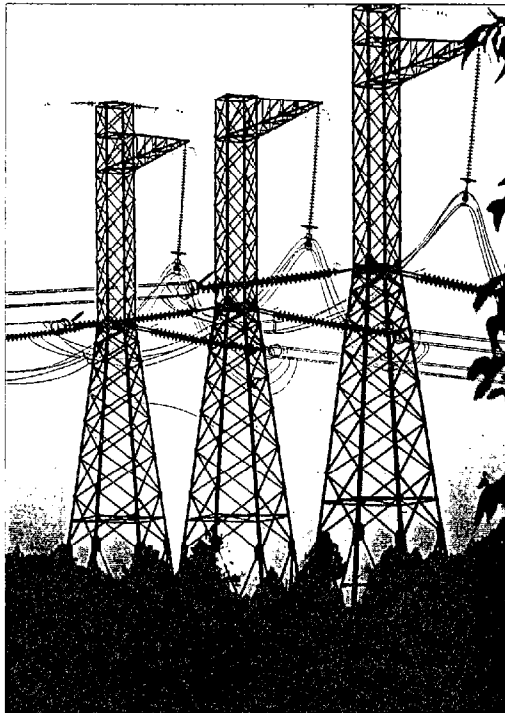
The majority of turbines is of Frame 5 - Frame 9 generation. The newly built Phu My power plant is one of the world's most state-of-the-art plant. Currently these power plants have only single cycle gas turbine units and they will be equipped with HRSGs to become high efficient combined cycle power plants.

### Transmission network:

EVN has 4 power transmission companies that manage the network of 66 kV, 110 kV, 220 kV and 500 kV.

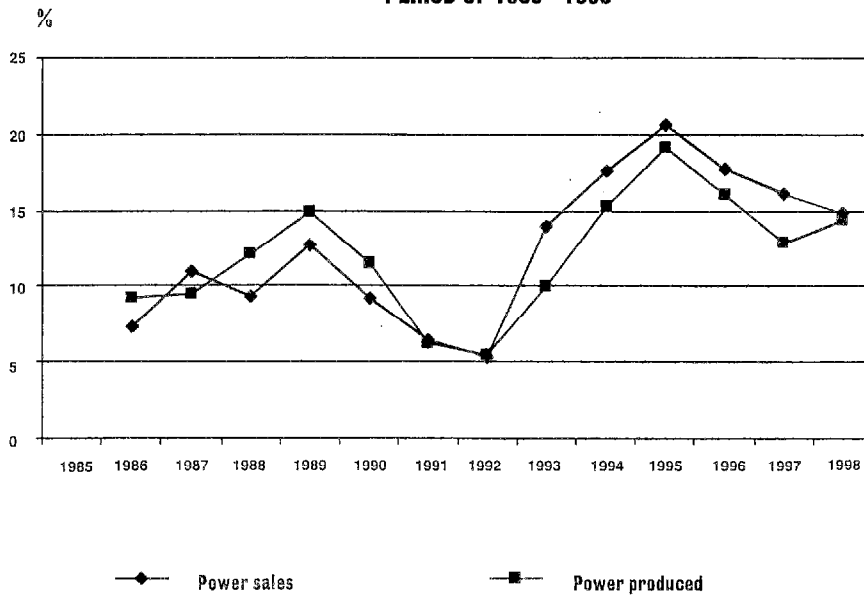
During the latest three years, EVN has constructed and put in operation 1,472.3 km of transmission lines and 2,155 MVA of transformers' capacity including 364.6 km and 796 MVA transformers' capacity of 220 kV and 1,107.7 km of transmission lines and 1,359 MVA of transformers' capacity of 110 kV.

In parallel with the construction of new power plants, a large amount of new transmission lines will also be constructed throughout the country. The substations currently in operation will be upgraded to improve their safety and reliability.

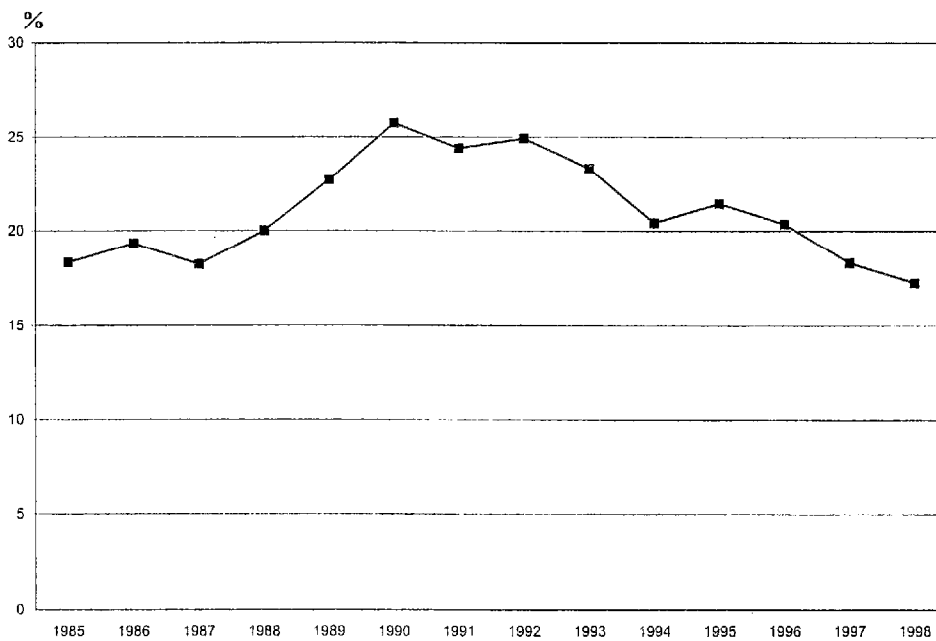


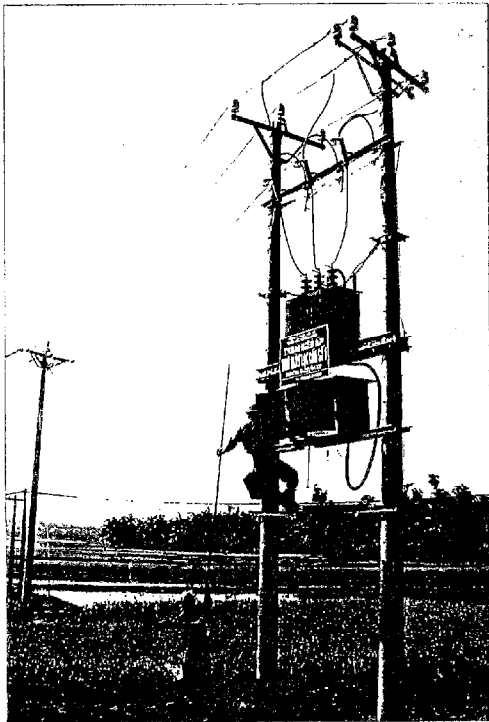
**ELECTRICITY OF VIETNAM**

**POWER PRODUCTION AND SALES GROWTH RATES FOR THE PERIOD OF 1985 - 1998**



**TRANSMISSION AND DISTRIBUTION LOSSES FOR THE PERIOD OF 1985 - 1998**





### Distribution Network:

Currently, there is 209,457 km of medium voltage distribution lines of from 6.6 kV up to 35 kV in operation. Power Company No.1 (PC1), Power Company No.2 (PC2), Power Company No.3 (PC3), Hanoi Power Company (HPC) and Ho Chi Minh City's Power Company (HCMPC) manage 23,168 km, 174,103 km, 7,878 km, 1,836 km and 2,471 km of those lines, respectively.

The Power Sector also manages 38,542 km of low voltage distribution lines. In particular, PC1, PC2, PC3, HPC, HCMPC own 18,252 km, 12,886, 3,608, 901, 2,893 km of lines, respectively.

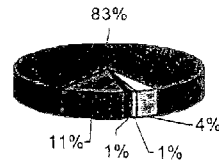
Currently, EVN aims to standardize the voltage level for medium voltage distribution network by applying an unique level of 22 kV for their entire country-wide system and further improve supply's voltage quality for their customers.

LOW VOLTAGE NETWORK



■ PC1 ■ PC2 □ PC3 □ PCHN ■ PCHCM

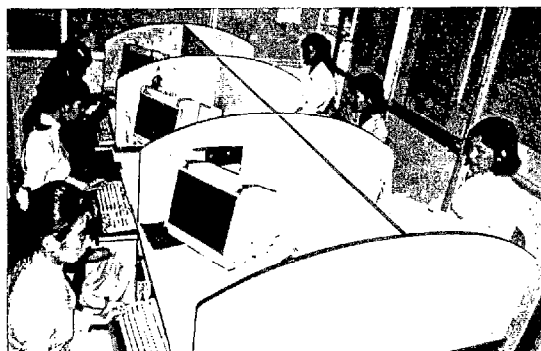
MEDIUM VOLTAGE NETWORK



■ PC1 ■ PC2 □ PC3 □ PCHN ■ PCHCM

## CUSTOMERS' SERVICE ACTIVITIES

In implementing the strategy of continuously improving the quality of customer services, EVN is working hard to renovate its marketing management practices and to simplify customer service procedures to meet increasing demand in these areas. During 1998, a number of new regulations concerning marketing and customer service have been issued, such as "Regulations on communication with customers", "Regulations on single and three phase electric meters installation", according to which a customer's request for meter installation would take just 5 to 7 days to be satisfied. Other customer services have also been implemented, such as establishment of telephone "hot lines" at the central and provincial power companies to better serve the customers or establishment of meeting rooms at district and commune power service departments to timely receive customers' requests.

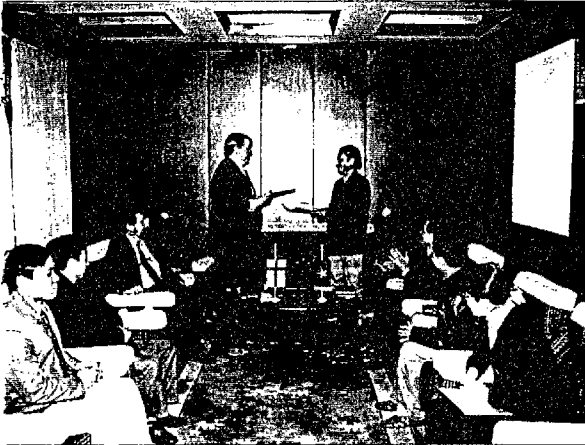


ELECTRICITY OF VIETNAM



## INTERNATIONAL COOPERATION ACTIVITIES

In the light of Party's and Government's renovation and opening policy, EVN has greatly expanded its cooperative relationship with international partners including international governmental and non-governmental organizations, international financial organizations, private investors and commercial banks. The policy to strengthen cooperation has resulted in significant achievements. Numerous power plants, transmission lines and substations have been constructed using international financing. Advanced technologies and know-how are widely applied in all areas of the power businesses. Organizations like the World Bank (WB), Asian Development Bank (ADB), and Swedish International Development Authority (SIDA) are among those that have assisted EVN in its development. Besides providing investment capital, these organizations play a key role in guiding the development and improving the efficiency of EVN's activities. Other official development aid (ODA) donors such as OECF, France, Belgium, Spain, and Germany... have contributed significant amounts of funds to the development of Vietnam's power sector. The following is statistics of EVN's international cooperation activities:



### WB loans:

Agreement No 2724-VN:	165 million USD
Agreement No 2820-VN:	180 million USD

### ADB loans:

Agreement No 1358-VIE:	80 million USD
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### OECF loans:

Phu My 1 Project:	49 billion Yen
Pha Lai 2 Project:	64 billion Yen
Ham Thuan-Dami Project:	53 billion Yen
O Mon Project:	0.6 billion Yen (for consulting services)
Can Tho Plant's upgrade:	0.7 billion Yen

### SIDA loans:

Agreement 1994-1999:	259 million SEK
Song Hinh project:	45.2 million USD
110 kV substations:	60 million SEK
Ha Tinh 500 kV substation extension:	112 million SEK
Rehabilitation and upgrade of distribution network in the Central Region:	122 million SEK
Finnish loans:	7.7 million USD
German Government's loans:	13 million USD
Spanish Government's loans:	17 million USD
Belgium Government's loans:	186 million BEF

Up to now, total capital that international financial organizations have loaned and/or committed to loan to EVN adds up almost 2 billion USD. Despite the significance of that number, to support country's investment and development needs, in the future, EVN will continue its close cooperation with these financial organizations.

## OTHER ACTIVITIES

### Manufacture of electrical equipment:

Is being carried out at a number of mechanical and electrical factories of EVN. Among those the Dong Anh Electrical Equipment Manufacturing Company is a good example. The company was established in 1980's initially to repair and fabricate spare parts for the entire power industry. To meet the demand for development in power industry and the requirements of the market economy, the company has gradually shifted from repairing to mainly manufacturing electrical equipment. Notwithstanding the fact that factory's manufacturing lines were mainly upgraded from old repairing lines made in the former Soviet Union and locally, the majority of company's products, such as insulators, circuit breakers and transformers of up to 110 kV, have been accepted by the market. However, the factory's efficiency and its products' quality still need further improvement. In the future, the company aims to upgrade and renovate their facilities, to cooperate with foreign parties for applying advanced technologies and production lines just to meet the ever higher requirements of the market, well position themselves in competing with other foreign and local companies.

### Company's Production Capability:

**Manufacturing:** Power transformers of 110 kV, 63 MVA: 15 units/year. Distribution transformers: 1,000 units/year. High voltage insulators of 6 to 35 kV: 5,000 sets/year. Small hydro generators of up to 2,000 kW: 10 units/year. Cables type A and AC of up to 300 mm<sup>2</sup> of size: 5,000 MT/year. Galvanized towers: 10,000 MT/year. Lines' accessories: 1,000 MT/year.

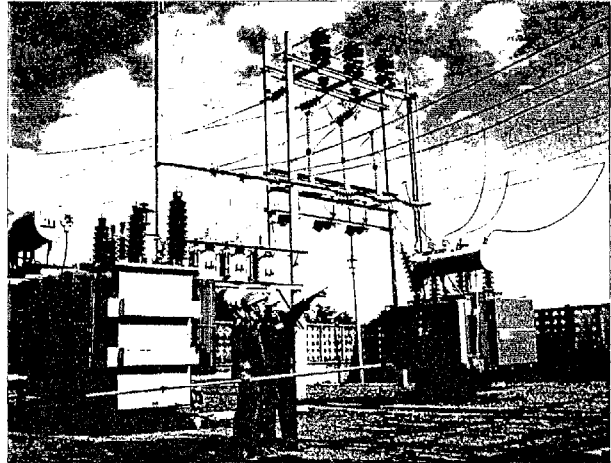
**Maintenance activities:** Power transformers: 10 - 15 units/year. Distribution transformers: 500 units/year. Generators, engines: 500 - 6000 units/year.

### Consulting Services:

To better satisfy the requirements of the power system's development, EVN has been significantly improving its consulting capability in terms of quality and quantity. Currently, EVN's engineering and design workforce is able to single-handedly deliver most of the consulting needs for up to the construction of sophisticated power plants.

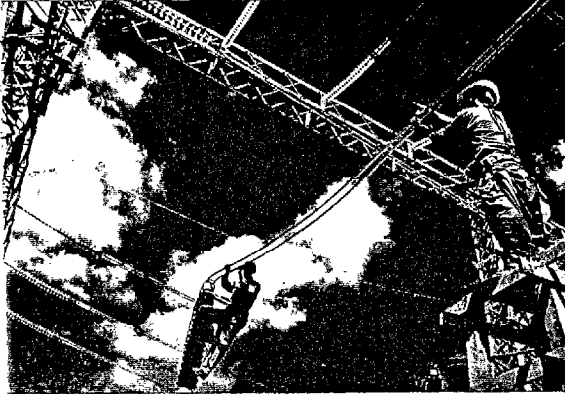
EVN currently has four units that provide consulting services. They are Power Investigation and Design Companies Nos. 1, and 2, Energy Center, Nha Trang's Design Institute. In addition, the Institute of Energy (a branch of EVN) carries out strategic planning for the development of Power Sector and prepares mid and long-term sector strategy plans.

In addition to servicing domestic projects, the consulting firms have begun their first steps into the other power markets in the region such as in Laos and Kampuchea. They also set up joint ventures with reputed foreign firms to improve service quality and expand scope of services in satisfying ever-increasing demand of customers.



ELECTRICITY OF VIETNAM

## ELECTRICITY OF VIETNAM MOVES FORWARD ALONGSIDE THE COUNTRY



### Power generating projects under construction:

1. Phu My 1 (CCGT), 1090 MW, operational by 2000.
2. Phu My 2-1 Extension (CCGT), 420 MW, two gas turbines operational by the end of 1998. Add-on portion operational 2001.
3. Phu My 2-1, 144 MW, add-on portion, operational by 2001.
4. Can Tho's Expansion, second stage, 2 Frame 6 of 37.5 MW each, operational 2nd quarter 1999.
5. Ba Ria's Expansion, add-on portion (1), 56 MW, operational 2nd quarter 1999.
6. Ham Thuan - Da Mi hydro, 472 MW, operational 2001.
7. Song Hinh hydro, 70 MW, operational by the end of 1999.
8. Yaly hydro, 720 MW. first two units operational by the end of 1999 and the remaining two units, by the beginning of 2000.
9. Pha Lai 2 thermal, 600 MW, operational 2000.

### Projects Under Construction Preparation Stage:

- |                                |         |
|--------------------------------|---------|
| 1. Dai Ninh hydro:             | 300 MW  |
| 2. Ba Ria, add-on portion (2): | 55 MW   |
| 3. O Mon gas-fired thermal:    | 600 MW. |

### Power Network Projects:

Currently, a number of important projects is being carried out, including the 500 kV transmission line from Yaly to Pleiku and other 220 kV and 110 kV lines throughout the country. It is expected that 1,810 km of new transmission lines and 1,908,620 KVA of new transformers' capacity will be put into operation in 1998. There are 408 km of lines and 1,100,000 kVA of transformers' capacity of 220 kV, 139 km of lines and 750,000 kVA of transformers' capacity of 110 kV, and 1,263 km of lines and 58,620 kVA of medium voltages.

To implement the rural electrification program, EVN currently focuses in constructing projects that bring electricity to key rural municipalities so that by the year of 2000, 100% of communes, 80% of villages and 60% of rural families will be provided with electricity.

Preparation for the construction of other power network of 22-35 kV, 110-220 kV for expansion and overload reduction purposes, and 500 kV transmission lines (Pleiku-Phu Lam, Phu My-Nha Be-Phu Lam) and substations (Ha Tinh, Nha Be) are all under way.

Besides transmission network expansion, EVN is accelerating rehabilitation of distribution systems in some of the key cities, particularly, Ho Chi Minh City, Ha Noi, Hai Phong, and Da Nang using loan financing from WB and ADB.



ELECTRICITY OF VIETNAM

## Development plan of up to 2010

The Power Demand Forecast up to the year 2010 is prepared based on two cases: base case and high case. The numbers are in million kWh:

Year	Base Case	High Case
2000	27,500	30,000
2005	47,737	53,650
2010	78,486	87,323

To satisfy the above demand, EVN has worked out an impressive investment plan covering construction of large power plants throughout the country, development of BOT projects, and transmission and distribution projects. Plan for expansion of major generating power plants for the period from 2005 to 2010 is as follows:

Phu My 2-2 CCGT	720 MW
Phu My 3 CCGT	720 MW
Quang Ninh thermal	300 MW
O Mon thermal	600 MW
Se San 3 hydro	260 MW
Na Duong thermal	100 MW
Dai Ninh hydro	300 MW
Can Don hydro	72 MW
Uong Bi thermal Extension	300 MW
Dai Thi hydro	300 MW
Soc Trang CCGT	475 MW
Thuong Kon Tum hydro	220 MW
Hai Phong thermal	300 MW
Pleikrong hydro	120 MW
Dong Nai 3 hydro	255 MW

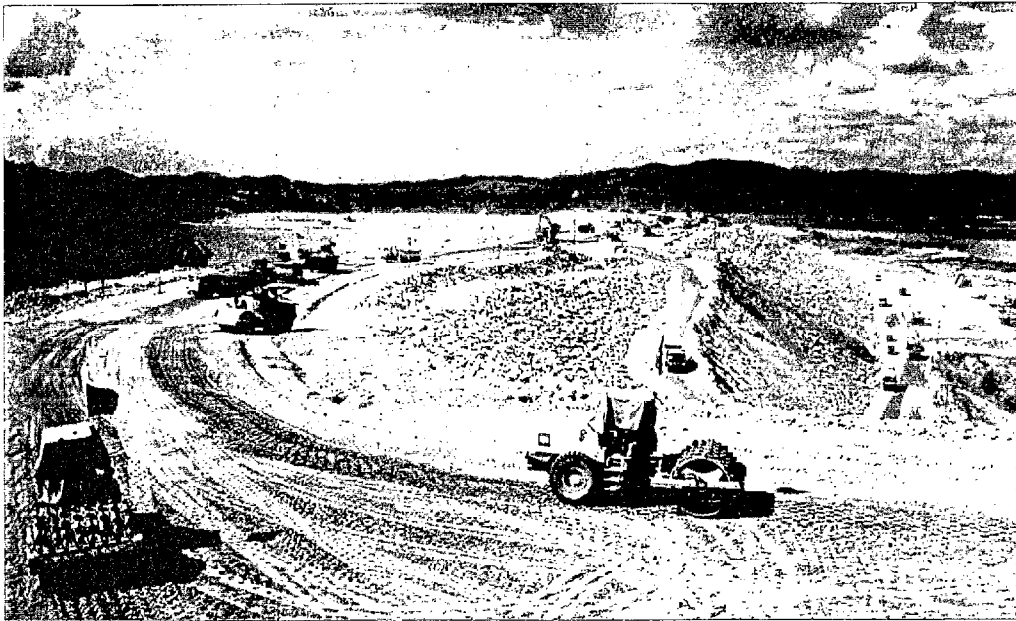


Ban Mai hydro	350 MW
Se San 4 hydro	340 MW
Buon Kuop hydro	85 MW
Son La hydro	3,600 MW
Purchase from Laos	1,500 - 2,000 MW
Mekong Delta and Nhon Trach CCGT	1,200 - 2,400 MW

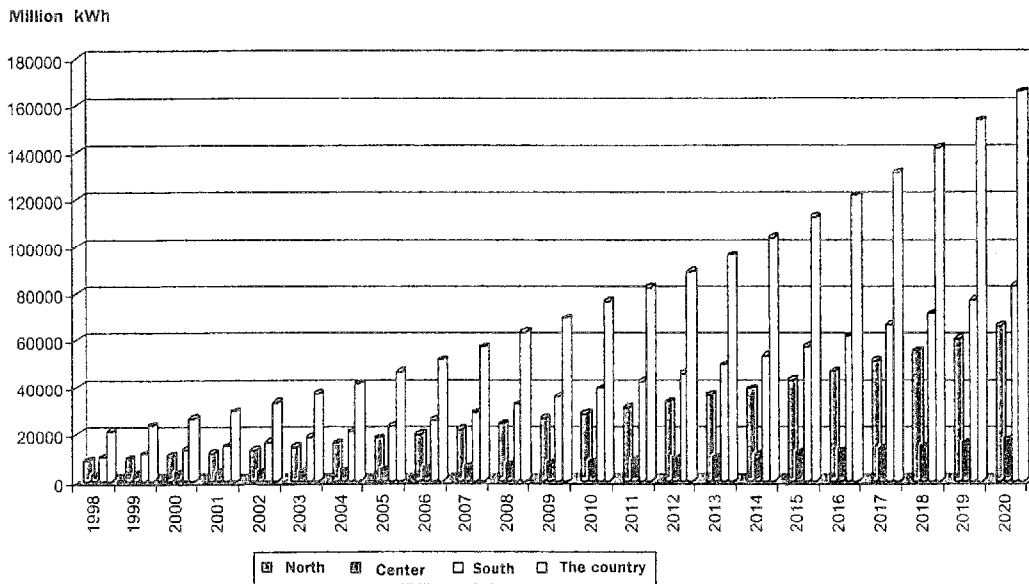
*(subject to gas availability and demand requirements)*

With the expansion of the generating capacity, the power transmission (500 kV, 220 kV, 110 kV) and distribution (22 kV, 35 kV) networks will further develop as well. The existing facilities will be gradually upgraded and modernized, particularly in the congested urban areas for higher profitability and aesthetic purposes.

Financing requirements to achieve those investment targets during 1999 - 2010 are estimated at 378,859 billion VND which equals to 29.143 billion USD, including 235,324 billion VND for generation expansion and 143,535 billion VND for network expansion.



**VIETNAM'S POWER DEMAND GROWTH FOR THE PERIOD UP TO 2020**



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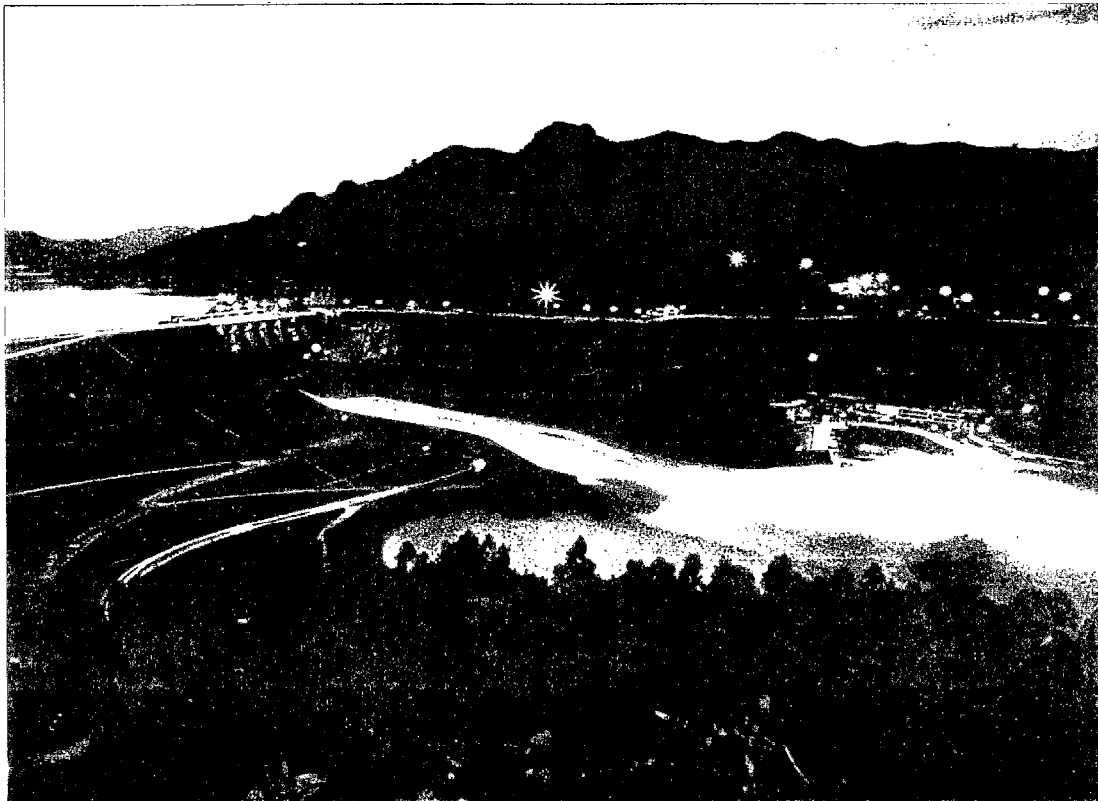
## DEVELOPMENT AND ENVIRONMENT

The development of hydro power plants with big reservoirs is always associated with a number of environmental issues such as agriculture land and floral carpet destruction, elimination of forest areas due to water occupation, relocation of people from the storage areas, salinity... Massive construction of thermal power plants will also cause their own environmental problems, such as emission of suspended dust, toxic airs, green house effects... Discharged water, ash and slag from these plants are the threats to pollute the surface and underground water sources and agriculture land.

To deal with the environmental issues, during the approval process, EVN requires that new projects should provide reasonable technical solutions, modern technologies and effective waste processing equipment. All the coal-fired power plants will be equipped with state-of-the-art dust precipitators such as the ones at Pha Lai 2, Phu My, Ba Ria combined cycle power plants. EVN takes care of the people, who have to relocate from the flooded areas by providing them with living conditions at the new place, which are not less comfortable than their previous ones.

EVN also uses effective measures to upgrade old plants' equipment, to modernize the technologies, particularly, those of waste processing facilities for the improvement of environment conditions. EVN has decided to close the out-dated power plants in Ha Noi, Hai Phong, Viet Tri, and Thai Nguyen that can no longer meet technical requirements and environmental standards.

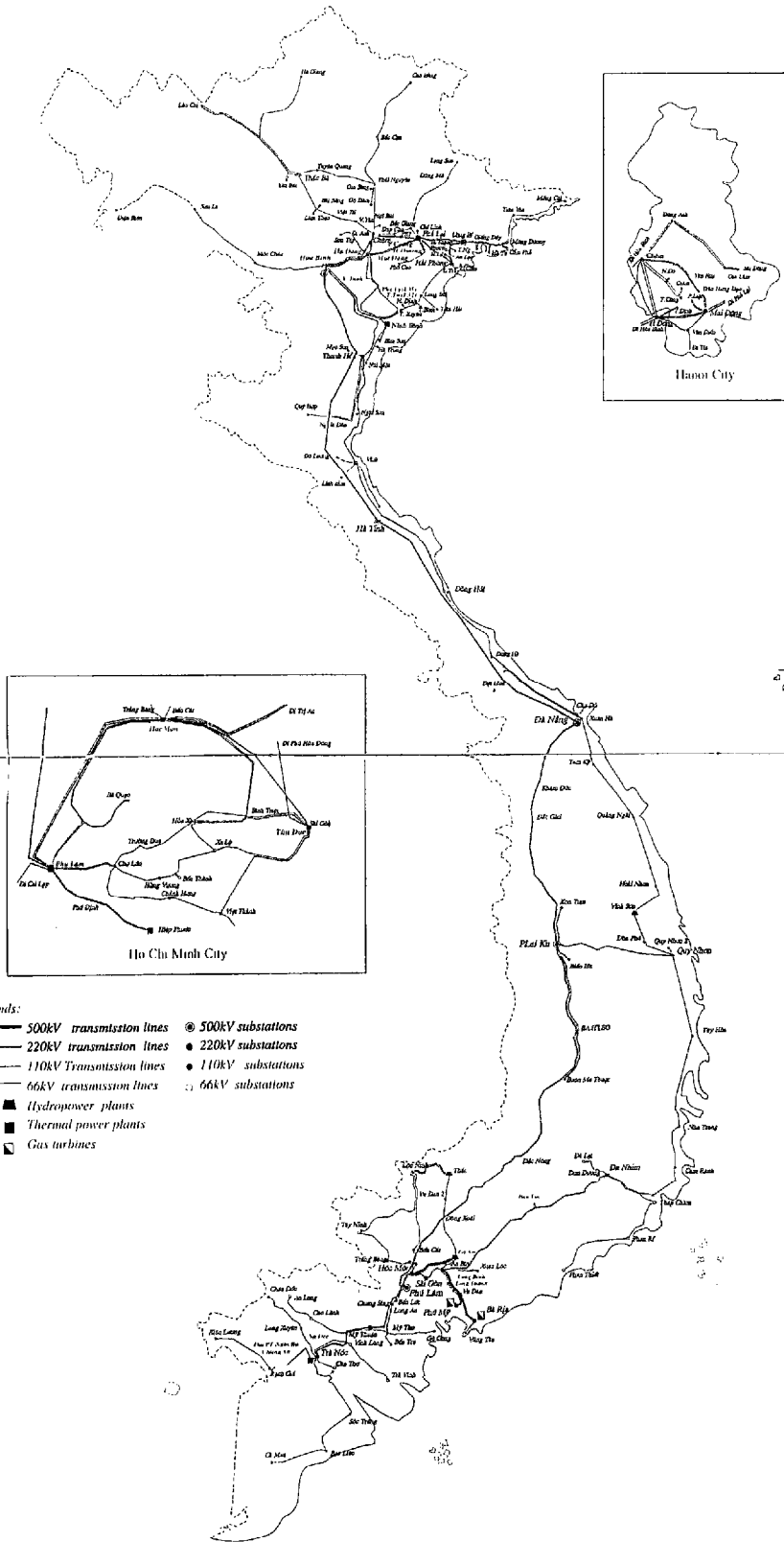
In understanding the importance of environmental problems, EVN currently prepares a plan for upgrading the existing power plants to meet the environmental requirements and to utilize modern, environmental friendly technologies for the new power plants.



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ELECTRICITY OF VIETNAM

# GEOGRAPHICAL SCHEME OF THE POWER SYSTEM



**BALANCE SHEET FOR THE FISCAL YEARS ENDED 31/12/1997**

Million VND

	1995	1996	1997
<b>ASSETS</b>			
<b>A. Current assets and short term investment</b>	<b>5,266,750</b>	<b>10,168,094</b>	<b>14,651,596</b>
Cash	1,523,033	2,984,653	4,071,768
Short term financial investment	237	188	6,879
Account receivable	1,971,852	5,073,915	8,028,337
Inventories	1,586,077	1,843,762	2,104,105
Other current assets	180,552	255,449	432,739
Administrative expenses	4,999	10,127	7,768
<b>B. Fixed assets and long term investment</b>	<b>19,795,485</b>	<b>21,165,209</b>	<b>20,745,106</b>
Fixed assets	19,534,195	20,641,018	20,032,721
Long term financial investment	1,989	21,306	28,014
Construction projects in progress	259,293	502,762	684,070
Advance payment	8	123	301
<b>Total assets</b>	<b>25,062,235</b>	<b>31,333,303</b>	<b>35,396,702</b>
<b>LIABILITIES</b>			
<b>A. Account payable</b>	<b>4,122,991</b>	<b>8,023,852</b>	<b>11,687,159</b>
Short term debts	3,170,228	4,898,100	7,338,774
Long term debts	630,315	2,373,478	3,707,597
Other debts	322,448	752,274	640,788
<b>B. Owner's equity</b>	<b>20,939,244</b>	<b>23,309,451</b>	<b>23,709,543</b>
Funds	20,930,114	23,296,015	23,698,751
Budget	9,130	13,436	10,792
<b>Total liabilities</b>	<b>25,062,235</b>	<b>31,333,303</b>	<b>35,396,702</b>

**INCOME STATEMENTS FOR 1995, 1996, 1997**

Million VND

	1995	1996	1997
<b>Total Revenues</b>	<b>8,198,109</b>	<b>9,780,636</b>	<b>12,124,640</b>
<b>Less</b>	<b>806,008</b>	<b>698,907</b>	<b>884,070</b>
Depreciation	279,690	448	892
Discount	505	6	1,062
Returned merchandises	11	44	963
Turnover tax, import-export tax	525,802	698,409	881,153
<b>Net sales</b>	<b>7,383,512</b>	<b>9,082,226</b>	<b>11,240,570</b>
Cost of goods sold	5,485,814	5,702,360	8,721,849
<b>Gross profit</b>	<b>1,897,698</b>	<b>3,379,866</b>	<b>2,518,721</b>
Sales expenses	98,634	116,601	286,408
Administration expenses	819,254	901,825	492,461
<b>Net income from operation</b>	<b>979,810</b>	<b>2,361,440</b>	<b>1,739,852</b>
Income from financial activities	49,283	185,118	224,773
Financial activity expenses	29,814	45,280	17,857
<b>Net income from financial activities</b>	<b>19,469</b>	<b>139,838</b>	<b>206,916</b>
Irregular incomes	11,633	112,145	90,046
Irregular expenses	5,896	14,873	38,219
<b>Irregular income</b>	<b>5,737</b>	<b>97,272</b>	<b>51,827</b>
<b>Profit before tax</b>	<b>1,005,016</b>	<b>2,598,550</b>	<b>1,998,595</b>
Income tax and other taxex	301,505	783,389	1,160,375
<b>Profit after tax</b>	<b>703,511</b>	<b>1,815,161</b>	<b>838,220</b>

**ELECTRICITY OF VIETNAM**



## EVN'S MEMBER ORGANIZATIONS

### Power Company No.1

18, Tran Nguyen Han str., Hoan Kiem dist., Ha Noi city.  
Phone: 84.4.8255074  
Fax: 84.4.8244033

### Power Company No.2

72, Hai Ba Trung, dist. No.1, Ho Chi Minh city.  
Phone: 84.8.8299633  
Fax: 84.8.8299680

### Power Company No.3

315, Trung Nu Vuong str. Da Nang city.  
Phone: 84.511.622460  
Fax: 84.511.625071

### Hanoi Power Company

69, Dinh Tien Hoang str. Hoan Kiem dist. Ha Noi city.  
Phone: 84.4.8256915  
Fax: 84.4.8267016

### Ho Chi Minh Power Company

12, Nguyen Thi Minh Khai str. dist. No1, Ho Chi Minh city.  
Phone: 84.8.8299634  
Fax: 84.8.8241616

### Energy Center

32, Ngo Thoi Nham str. dist. No. 3, Ho Chi Minh city  
Phone: 84.4.8299801  
Fax: 84.8.8231938

### Institute of Energy

Ton That Tung str. Dong Da dist. Ha Noi city.  
Phone: 84.4.8523353  
Fax: 84.4.8523311

### Power Information Center

13, Yen The lane, Dong da dist. Ha Noi city.  
Phone: 84.4.7333375  
Fax: 84.4.7333383

### Center for Science, Technology, Environment and Information

18, Tran Nguyen Han str., Hoan Kiem dist., Ha Noi city.  
Phone: 84.4.8252515  
Fax: 84.4.8249462

### Northern Power Projects Management Board

84 Bach Dang, Chuong Duong, Hoan Kiem, Hanoi  
Phone: 84.4.9320825  
Fax: 84.4.8544955

### Central Power Projects Management Board

2-9 str. Da Nang city.  
Phone: 84.511.624151  
Fax: 84.511.624154

### Southern Power Projects Management Board

383A, Ben Chuong Duong str. dist. No. 1, Ho Chi Minh city.  
Phone: 84.8.8361095  
Fax: 84.8.8361096

### Pha Lai 2 TPP Project Management Board

Pha Lai town, Chi Linh dist. Hai Duong province  
Phone: 84.32.881344  
Fax: 84.32.881354

### Power Investigation and Design Company No.1

Thanh Xuan str. Ha Noi city.  
Phone: 84.4.8543188  
Fax: 84.4.8541208

### Power Investigation and Design Company No.2

32, Ngo Thoi Nham str. dist. No3, Ho Chi Minh city.  
Phone: 84.8.8258757  
Fax: 84.8.8243408

### Telecommunication Company

5D, Nghi Tam str. Tay Ha dist. Ha Noi city  
Phone: 84.4.8241037  
Fax: 84.4.8256675

### Electrical equipment manufacturing Company

Dong Anh town, Dong Anh dist. Ha Noi city.  
Phone: 84.8832011  
Fax: 84.8833819

### Power Transmission Company No.1

15, Cua Bac str. Ba Dinh dist. Ha Noi city.  
Phone: 84.4.8293152  
Fax: 84.4.8238638

### Power Transmission Company No.2

251, Nui Thanh str. Da Nang city.  
Phone: 84.511.623609  
Fax: 84.511.625625

### Power Transmission Company No.3

14, Tran Hung Dao str. Nha Trang city.  
Phone: 84.511.821188  
Fax: 84.511.823836

### Power Transmission Company No.4

7, Ha Noi str. Thu Duc dist. Ho Chi Minh city.  
Phone: 84.8.8967158  
Fax: 84.8.8961191

### National Load Dispatching Center

18, Tran Nguyen Han str., Hoan Kiem dist., Ha Noi city.  
Phone: 84.4.8243745  
Fax: 84.4.8246705

### Hinh River HPP Project Management Board

2C, Tran Hung Dao str. Tuy Hoa town, Phu Yen province  
Phone: 84.5.7825375  
Fax: 84.5.7823921

### Ham Thuan Da My HPP Projects Management Board

32, Ngo Thoi Nham str. dist. No. 3, Ho Chi Minh city  
Phone: 84.8.8295612  
Fax: 84.8.8294378

### Yaly HPP Project Management Board

Chu Pa dist. Gia Lai province  
Phone: 84.59.823613  
Fax: 84.59.823603

### Phu My Ba Ria CCPP Project Management Board

72, Hai Ba Trung, dist. No.1, Ho Chi Minh city.  
Phone: 84.8.8299135  
Fax: 84.8.8299654

### O Mon CCPP Project Management Board

Can Tho city  
Phone: 84.71.841281  
Fax: 84.71.841785

### Power Pre-Investment Management Board

13, Yen The lane, Dong Da dist. Ha Noi city.  
Phone: 84.4.7333385  
Fax: 84.4.7333385

### Son La HPP Pre-investment Management Board

13, Yen The lane, Dong Da dist. Ha Noi city.  
Phone: 84.4.7330996  
Fax: 84.4.7331398



## **OUR WORKING PRINCIPLES**

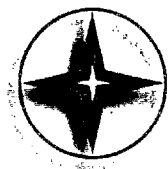
### **WITH CUSTOMERS:**

1. To always satisfy the electricity demands of all customers with ever higher quality and better services;
2. To be polite, receptive with customers;
3. To act promptly on customers' concerns;
4. To make every effort to ensure our products and services improve customers' living standards.

### **WITH EMPLOYEES:**

1. To provide our employees with opportunities for professional growth and advancement on the basis of their performance, integrity and loyalty to the organization;
2. To provide our employees with just and competitive compensation and benefits that ensure their stable living conditions;
3. To guarantee fairness, equal treatment and opportunity for the employees to maximize their contribution to the development of the organization;
4. To provide suitable working conditions that facilitate an open and honest communication and sharing of information among all employees to promote teamwork, productivity and cooperative empowerment for the organization's growth.

**ELECTRICITY OF VIETNAM**



## **WITH SUPPLIERS**

1. To foster friendly, stable, long-term and mutually beneficial relations with our suppliers for a power system of quality, reliability, safety and efficiency;
2. To seek and develop relations with suppliers having good business tradition, respect to customers and truthfulness.

## **WITH COMMUNITY**

1. To uphold and maintain the highest standards of business ethics;
2. To fulfill our social responsibilities;
3. To actively contribute to the social development.

## **ELECTRICITY OF VIETNAM**

Designed and Pre-press by Ringier-Thongnhat Pre-press Joint-venture Co. Ltd.  
Printed 1.500 copies by Thong Nhat Printing Company, 136 Hang Bong, Ha Noi  
Licence No: 187/QD-CXB Dated 24th December 1998



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