Chapter 8. Environmental Considerations for the Project from the Global Perspective

8.1 Environmental Considerations on Power Development

At an early planning stage of development of power generation plant, the following two points need to be well investigated and studied; 1) necessity of the development and 2) induced impacts on natural and social environments. Related items which are regarded as important are the transparency of the plan, enhancement of accountability and participation of local people and NGOs who may be affected by the plan.

The Study considers an assessment of impacts on natural and social environments as one of the two most important criteria when selecting options. The other criterion is evaluation of best – mix option of electricity generation sources and optimization of peaking power generation. From the viewpoint of natural and social environmental considerations, proposed pumped storage power generation sites and characteristics of other power generation sites will be studied adequately and examined through appropriate and adequate evaluation of the Project including on-the-spot investigations.

In this Study, a full-scale SEA is not introduced because of various impediments such as time constraints. However, we have applied the concept of SEA in the Study and have practiced environmental considerations accordingly. A project EIA cannot cover a wide range of environmental considerations which can be practiced based on the concept of SEA.

The concept of SEA has been applied on the following two exercises of the Study. One is "Environmental considerations on power development" and the other is "Selecting PSPP sites."

(1) Environmental Considerations on Power Development

One of the objectives of the Study is to propose an optimized power development scenario based on the 5th Master Plan by the Government of Vietnam. In order to practice environmental considerations at this stage, we have listed the environmental effects of each power development option and have evaluated each option from an environmental point of view.

Major environmental effects of hydropower generation, coal-fired thermal power generation, gas-fired thermal power generation and PSPP are summarized in the following table.

Table 8-1 Environmental Effects of Each Power Development Option[1]

Power development option	Effects	
	Social Environment	Natural environment
Hydropower generation	• Involuntary resettlement (large scale)	• Submersion of terrestrial ecosystems • Disruption of aquatic ecosystems
Coal-fired thermal power generation	• Involuntary resettlement • Effects on fisheries caused by cooling water and warm discharged water • Emission of Sox, Nox & CO_2 • Disposal of coal ash: It is necessary to consider its secondary effects.	• It is considered that there are some impacts on terrestrial and aquatic ecosystems.
Gas-fired thermal power generation	• Involuntary resettlement • Effects on fisheries caused by cooling water and warm discharged water • Emission of CO_2	• It is considered that there are some impacts on terrestrial and aquatic ecosystems.
PSPP	• Involuntary resettlement	• Submersion of terrestrial ecosystems • Disruption of aquatic ecosystems

When we evaluated each power development option, we focused on the issue of how we can avoid major negative environmental effects according as seen in Table 8-1. We did not consider detailed mitigation measures of each effect. This is because these mitigation measures are supposed to be different from site to site where each power development option is planned. In the case of PSPP, the Study conducted an in-depth study on the plan and also conducted an initial environmental assessment at selected sites as described later.

Considering local negative impacts, the above-mentioned power development options can be aligned as follows based on their possible scale of impact. They are aligned by a scale of impact caused by each option from LARGE to SMALL.

[1] Based on the following guidelines, **Environmental Guidelines for Selected Industrial and Power Development Projects** (Office of the Environment, Asian Development Bank, 1993), **Environmental Assessment Sourcebook; Volume II and Volume III** (Environmental Department, World Bank, 1991) and **JAPAN BANK FOR INTERNATIONAL COOPERATION GUIDELINES FOR CONFIRMATION OF ENVIRONMENTAL AND SOCIAL CONSIDERATIONS** (Japan Bank for International Cooperation, 2003).

LARGE Hydropower (large scale) > hydropower (medium – small) = PSPP > coal-fired thermal > gas-fired thermal SMALL

The issue on CO_2 emission is one of the most urgent and crucial global concerns. The Kyoto Protocol of "United Nations Framework Convention on Climate Change" has been put into action, which the Government of Japan pays a great deal of attention to its implementation. Regarding the scale of CO_2 emissions, they can be aligned as the following.

LARGE Coal-fired thermal > gas-fired thermal > hydropower = PSPP SMALL

The above-mentioned environmental considerations were given for evaluating power development scenarios.

Other considerations were also given. It is important to try to reduce the total requirement of power development which directly leads to an abatement of unnecessary negative impacts under the condition of achieving the planned goal for "stable power supply." It is also necessary to promote energy saving policy as an essential requirement of the demand side. These two practices are highly effective and realistic from the viewpoints of efficient allocation of resources and of environmental considerations, which were also considered as important criteria when we evaluated each power development option.

(2) Selecting PSPP Sites

PSPP is one of the power development options and, under normal circumstances selection of sites should be conducted after the formulation of the scenario. However, because of various constraints, the Study concurrently has conducted the two exercises; formulation of power development scenario and selecting of the PSPP sites.

PSPP is considered the most promising source for peaking power generationThe Study carried out surveys on its potential in Vietnam. In order to evaluate the possibility of developing PSPP in Vietnam we conducted surveys on selecting suitable sites for PSPP and preliminary layout design of PSPP at a selected site.

When we selected sites, we applied the concept of SEA, and implemented appropriate considerations on social and natural environments. However, the Study did not fully disclose

information to the public as indicated by HARASHINA[1].

First, from the viewpoint of topographical and technical issues, the desk study selected the first 38 sites. We then verified whether the first 38 sits are within range, or close enough to the existing and proposed protected areas, and other globally important natural areas, and we screened them again from the technical point of view. Based on this exercise, ten sites remained.

The first on-the-spot field survey was conducted at all ten sites. These sites were surveyed from a technical and environmental point of view. The assessment of the environments was conducted at each site based on the prepared environmental parameter checklist. The first field survey reduced the remaining ten sites down to four sites.

A more detailed survey was conducted at the above-mentioned four sites as the second on-the-spot field survey. The assessment of the environments was again conducted based on the checklist.

(3) Environmental Impact Assessment: EIA

a. What is EIA?

EIA here implies a project EIA.

In Vietnam, related legislation on EIA has already been established, and EIAs have been conducted in various projects for which EIAs are required under the EIA process according to legislation. (「2.3 Environmental considerations in Vietnam」)

b. EIA at PSPP Sites

Regarding the environmental considerations on PSPP, in the next stage (e.g. feasibility study), detailed surveys on social and natural environments need to be conducted in order to proceed with a full EIA.

Meetings at each site should be conducted several times in order to explain the project itself, in addition to any negative and positive impacts and risks and to obtain opinions from the local villagers. It is important to note that it is ideal to obtain opinions from all of the villagers, not just from the village leaders. Opinions from all villagers should be adequately reflected in the plan. If resettlement is inevitable, it is necessary to conduct a study based on the natural and social environments of the proposed resettlement area and to propose adequate mitigation measures.

[1] "What is Strategic Environmental Assessment?" (Sachihiko HARASHINA. Bulletin of Real Estate Vol. 13, No.3, June 1999. In Japanese)

A comprehensive survey on the natural environment of and around each site should be conducted at least for the duration of one year, and then mitigation measures including cancellation of the project should be proposed.

The above-mentioned surveys should be carefully planned in order to use these data for the future monitoring programs.

It also is important to note that even at the recommended PSPP site, only an initial environmental assessment was conducted because of time constraints. A full EIA should be conducted in the next stage (e.g. feasibility study). Depending on the results of the EIA, we may have to reconsider the project at the recommended site including possible cancellation of the project.

c. EIA at Other Power Development Sites

The Government of Vietnam should evaluate power development sites recommended in the scenario from the viewpoint of environmental considerations. EIAs will be implemented at some sites on a certain scale as described in the Vietnamese legislation.

However, it has been pointed out that there are various controversial matters regarding EIA in Vietnam including its implementation and process. For example, regarding the natural environment, studies on wildlife (e.g. birds, fish) and on ecosystems are insufficient, and proposed mitigation measures are inadequate. In terms of the social environment, sufficient consideration has not been given to local residents who are resettled. It is absolutely necessary for the Government of Vietnam to reflect on the lessons learned from the past cases of EIAs and to implement appropriate and adequate EIAs based on international standards such as the new EIA guidelines of the Asian Development Bank[1] and the report compiled by the World Commission on Dams[2].

[1] Asian Development Bank (2003). *Environmental Assessment Guidelines*. Manila, Philippines.
[2] World Commission on Dams (2000). *Dams and Development – A New Framework for Decision-Making*. Earthscan Publications Ltd., London, U.K. A Vietnamese version of the report can be obtained at the UNDP Hanoi office.

8.2 Demand Side Management（DSM）

(1) Current Situations and Future Plans for DSM in Vietnam

DSM in Vietnam is under the guidance of the DSM Management Board of the MOI. The DSM Management Board is implementing a three-phase DSM program as follows:

① Phase-I（2000-2003）: implementation of TAs and pilot projects

② Phase-II（2003-2005）: implementation of major DSM programs

③ Phase III（2005-2010）: expansion of major DSM programs and implementation of commercial-based energy efficiency programs

Based on the results of Phase-I, Phase-II is currently underway in order to expand the use of DSM as a tool to help EVN and its PCs better manage loads, load curves and improve load factors. The second phase would seek to achieve over 120 MW in system peak reduction and annual energy savings of about 64 GWh through the implementation of four major DSM programs as described in Table 8-2. The programs will be managed by EVN and implemented with support from its PCs.

Table 8-2 Phase-II DSM programs

Program Name	Peak Reduction (MW)	Energy Saving (GWh/yr)	Program Outline
TOU Metering	69.7	－	Installation of 5,600 time-of-use (TOU) meters for about 4,000 large-sized customers to help regulate consumption during peak periods.
Pilot DLC Program	3.1	－	Introduction of a pilot direct load control (DLC) program using ripple control systems to curtail demand in about 2,000 customer end-use loads.
CFL Program	33.4	39.0	Promotion of sales of 1 million compact fluorescent lamps (CFL) to households in areas of high loads by procuring in bulk packages.
FTL Program	14.1	25.2	Provision of a marketing grant to participating manufacturers to support their costs in actively marketing more energy-efficient lamps.
Total	120.5	64.2	

In addition to the above measures, the “Decree on Thrifty and Efficient Use of Energy” was published in September 2003, targeting industrial and commercial energy consumption. According to the Decree, major processing, mining, electrical energy production, and thermal energy production companies must register their energy saving norms, keep and report statistics on energy use. In addition, when constructing new buildings, it is necessary to use of heat-insulation materials and energy-efficient equipment.

(2) DSM Practices in ASEAN Countries and Japan

DSM practices in ASEAN countries such as Thailand, Indonesia, and the Philippines are described in the Main Report. In this report, DSM practices in JAPAN are explained.

Table 8-3 summarizes DSM practices in Japan with regards to DSM categories (peak-shift, peak-cut, bottom-up, and energy efficiency).

Table 8-3 DSM Practices in Japan

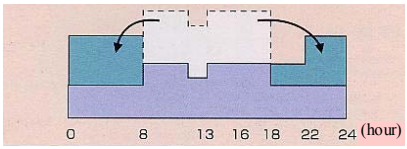
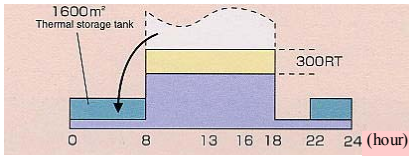
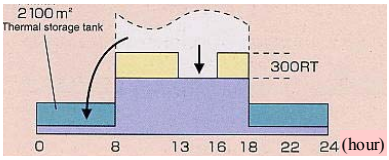
Category	Outline
Peak-shift	• Activities for popularization of equipment and other arrangements for customers ➢ Encouraging the use of thermal storage air conditioning system ➢ Load adjustment through changes in industrial production process ➢ Shift of operations by industrial customers to holidays in summer • Rate options conductive to load leveling, subsidy for popularization ➢ Annual load adjustment contract, thermal storage load adjustment contract, time-of-use power service ➢ Financial incentives
Peak-cut	• Activities for popularization of equipment and other arrangements for customers ➢ Peak load adjustment through the use of thermal storage tanks, a shift of lunchtime and minor changes in production process ➢ Load adjustment for major customers in case of strained supply capacity • Rate options conductive to load leveling, subsidy for popularization ➢ Interruptible contract ➢ Financial incentives
Bottom-up	• Activities for popularization of equipment and other arrangements for customers ➢ Encouragement to use electric water heaters and thermal storage floor heaters • Rate options conductive to load leveling, subsidy for popularization ➢ Night-only service
Energy efficiency	• Activities for popularization of energy efficient measures for customers ➢ Provision of information through media, pamphlets, and receipts ➢ Consultation via door-to-door visits to customers ➢ Consulting service on energy efficiency

Among those measures, the following chart introduces “Load Adjustment Contracts” which require less initial investments and are thus considered to be quite applicable to Vietnam.

Load adjustment contracts (LAC) for large customers reduce electricity rates in return for shifting consumption during peak hours. With regards to the period and method of adjustment,

LAC is categorized into annual load adjustment, thermal storage load adjustment, and load management. Outlines of each LAC are summarized in Table 8-4.

Table 8-4 Load Adjustment Contracts in Japan

Category	Outline	Image
Annual Load Adjustment	• The contract sets forth detailed rates for each season and time, so customers can reduce electricity charges by operating their factories in the period to which lower rates apply. • This option is advantageous for customers who can considerably shift electricity consumption by adjusting factory operations etc.	
Thermal Storage Load Adjustment	• Customers can save energy by using a thermal storage tank which stores thermal energy with low-cost electricity at night and uses the energy in the daytime. • At night, energy can be stored at a rate about 1/8 of that in the daytime and customers can also reduce the demand charge due to a reduction in the required capacity of the heat generating unit.	
Load Management	• Rates are reduced through adjustment of consumption during peak hours by rearrangement of production process, a shift in the lunchtime, and the use of thermal storage tanks. • Discounted rates also apply to customers if they significantly adjust their daytime load mainly by setting summer holidays for their factories on the weekdays.	

In addition to the above information, the interruptible contract, which allows customers to reduce or disconnect the load during peak hours, is also a feasible option. Under the interruptible contract, any load management action is announced to customers three hours ahead or immediately before the action. Customers receive discount rates when they reduce their consumption in accordance with the request.

Chapter 9. Recommendations

9.1 Recommendations from the View Point of Power Development Plans

(1) Recommendations about Optimum Power Development Plans

a. Appropriate Power Development Planning

1) Considering Limitations of the Vietnam System

The Vietnam system is extended from north to south, where there are two demand centers. The 500kV transmission line is utilized to supply these demands, but the 500kV transmission line has limitations of its capability.

Furthermore, the reserves of primary energy sources are distributed partially where the north region has hydropower and coal, the south region has hydropower, oil and gas, and the central region just has hydropower. The features of the Vietnam system affect the power development plan largely in long and middle terms. When the power development is planned, the features should be reflected properly.

When the power development plan is established to secure system reliability criteria with the appropriate amount of power development, should contain the following three items:

1. To record the actual operating data of existing plants and to collect the data of water flow of the rivers correctly, in order to reflect the water flow data of rivers on which future hydropower plants will be located
2. To select the proper method to simulate demand and supply balance
3. To revise the power development plan in a timely manner to catch up to the changing conditions

2) Steady Development of Hydropower

The development of hydropower is an economical scenario in middle term in order to meet the rapidly increasing peak demand and electric energy demand.

However, the deep consideration of social and environmental impacts is necessary for hydropower development. The measures should be conducted on the assumption that the hydropower development could be delayed.

1. To get the alternatives ready such as a thermal power and PSPP（conducting the Pre-F/S or F/S）
2. To add the capacity of AFC and the ability of WSS to the coal thermal plants installed in the north system

3) Installation of a Coal TPP in the South System

The development of a coal thermal power is important to Vietnam. The sufficient reserves of coal are confirmed in the north region. The coal transportation fee from the north to the south will amount to less than 20% of coal prices, but the prices per kWh are still around 40% of that of oil and gas. The low coal prices can reduce the annual fuel costs.

b. Recommendations on Individual Power Development Plans

1) Implementation of PSPP Development

It can be said that the first priority PSPP has high economic efficiency and low environmental impact. In addition, it is recommended to install the PSPP of 1,500MW in the northern region up to 2020 according to the results of the optimum power development study. However, it will take approx. 14 years to implement the project from start of F/S to commissioning of the PSPP. Therefore, it is recommended to conduct Preliminary feasibility study (Pre-F/S) as soon as possible.

Generally, in the Pre-F/S, the best site will be selected out of about three candidates prior to the F/S. For this selection, the development type and scale, project layout plan, preliminary construction cost estimate and preliminary EIA will be studied with the topographical map (1:5,000), hydrological data, site reconnaissance and so on.

It is also recommended to select Phu Yen East, Phu Yen West and one more site (JN6) in Pre-F/S stage, which are judged to be promising PSPP candidate sites in this study.

2) Peaking Power Supply development by Extension of Existing HPP

According to the result of the preliminary study, high economical efficiency was confirmed for the extension of the Tri An HPP. It is recommended that the feasibility study should be carried out.

Since the Tri An HPP is located in the most downstream of the Dong Nai river system, the extension project should be optimized in full consideration of concerning issues such as prevention of seawater rise to the Dong Nai river and affections of the other hydropower projects planned upstream in the Dong Nai river system etc. Therefore, the feasibility study on the extension project should be carried out as part of the HPP development optimization study in the Dong Nai river system.

3) Development of HPP in the North

The target of this study is to review the optimization of the installed capacity of Ban Chat and Huoi Quang HPP, which are planned as a cascade development and located in the Nam Mu River.

Son La dam is planned to locate downstream of the projects, and Hoa Binh dam lies further downstream in the same river. It is recommended, therefore, that the further study should be done comprehensively to optimize the operation of flood control of the Da river system and power generation of a series of HPPs by simulation of consecutive river system operation.

4) Coal TPP Development in the South

The transportation fee from Haiphong port to the coal TPP's site in the south was estimated based on that to Ho Chi Minh City of 7US$/ton as stated by Vinacoal.

On the contrary, the design of harbor facilities such as the navigation channel, turning basin and berth length was intended for 45,000DWT tanker, which may make transportation cost of coal cheaper in future.

Nevertheless the economical efficiency of promising candidate sites was satisfied. Therefore, it is recommended that further study such as project finding study or pre-feasibility study should be carried out on the promising candidate sites including transmission lines and priority should be put on them based on evaluation in terms of technical, economical and environmental aspects.

(2) Recommendations about Transmission System Expansion Programs

On the basis of the results of the study, implementation and additional studies of transmission system expansion programs are recommended as follows.

a. Optimum Expansion of the North - South Transmission Lines

Other than "The planed installation of 500 kV transmission lines in 2020 according to EVN" as described in Chapter 3, the installation of the following transmission lines should be implemented in order to connect the north region to the central region with 500 kV two circuits and the central to the south region with three 500 kV circuits.

From Plei Ku substation to Nha Trang substation, 500 kV transmission lines with ACSR 330 mm^2 x 4 x 1cct 300 km (Central to south), the construction costs amount to approx. 82 mil USD.

With the implementation of the above mentioned transmission lines, it will become possible to transmit 1,600 MW from the north region which has a significant amount of base power sources such as hydropower and coal thermal power plants to the central and south region. It will also become possible to transmit power in the central region including mainly hydropower to the south region which has many gas thermal power stations. Therefore, almost the same cost as those concerning the cost of transmission lines can be reduced in the fuel cost of generation, along with in investments of power plants.

Aside from that, the system reliability between the central and south region can be improved. However, the economical merit could not be clearly estimated so as to conclude the implementation of this case. Therefore, it will be necessary for EVN to carry out a detailed estimation of the effect of economic operations on saving fuel costs and careful examination about the effect of the improvement of system reliability.

EVN should decide whether or not the N-1 criterion is adopted as the reliability criterion of the 500 kV transmission system. In the case of adopting the N-1 criterion, reinforcement is needed for the 500 kV lines in the north region, along with the 500 kV transmission lines with three circuits between the north and central region and the 500 kV transmission lines with four circuits between the central and south region.

9.2 Recommendations from Financial Perspective

(1) Investment Plan

EVN's financing plan has been prepared from a financial perspective, and therefore, is different from the investment plan of the revised 5th Master Plan.

Although it is meaningful to consider investment from a financial perspective, for the future of the electricity power sector, it is recommended that the financial projections based on the revised 5th Master Plan be prepared and differentials analyzed, as well as be coordinated with the concerned parties.

(2) Foreign Exchange Risk

EVN has a significant amount of foreign loans in relation to past capital investments, and holding such foreign exchange risk, EVN's financial situation will be impacted by currency fluctuations. The government and EVN should discuss about situations when the currency fluctuates substantially and EVN can no longer cover the losses.

9.3 Recommendations on Power Development from the View Point of Environmental Considerations

(1) Power Development Scenario

a. Global Warming and Power Development Scenario

It is recognized that the global warming is one of the largest issues which human beings confront at the present day. It is also commonly accepted that developing countries urgently need to develop their power supply to meet their rapidly growing electric needs. In order to solve these

conflicting issues, hydropower generation is expected to play an important role in these countries. This is because hydropower generation is renewable and considered to be a "domestically-produced" energy source.

Judging from this point, the Study has concluded that it is economically feasible to go ahead with developing hydropower in Vietnam until 2020 according to the 5th Master Plan and then to start developing PSPP as a peaking power generation source.

On the other hand, as described in "8.1 Strategic Environmental Assessment", hydropower generation including PSPP is expected to locally have considerable negative impacts. In order to mitigate these impacts, the Study recommends that:

- The Government of Vietnam should implement appropriate and adequate Environmental Impact Assessments in response to these developments. The EIAs should propose appropriate and realistic mitigation measures to avoid, minimize and compensate for negative impacts on natural and social environments, and should also consider secondary impacts such as induced impacts by resettlement.

b. Realistic Power Development Scenario

When formulating the power development scenario, "feasibility and economical efficiency" is considered to be an important criterion, which has led to the conclusion to promote developing hydropower generation and coal-fired thermal power generation.

The other important criterion is "environmental considerations". From this criterion, coal-fired thermal power generation is not recommendable because of various negative impacts which it may cause. It is thought that gas-fired thermal power generation is better than coal-fired. However, the Study has formulated a scenario which includes the development of coal-fired thermal power generation considering its economic effect and resource reserve.

Developing coal-fired thermal power generation, the following are strongly recommended to pursue from the viewpoint of environmental considerations.

- The Government of Vietnam should implement appropriate and adequate EIAs on these developments. The EIAs should propose appropriate and realistic mitigation measures to avoid, minimize and compensate for negative impacts on natural and social environments, and should also consider secondary impacts such as the ones induced by disposal of coal ash. Regarding the disposal of coal ash, please refer to a JBIC PILOT STUDY "Environment improvement and pollution prevention by effective recycling of

industrial and domestic waste in Vietnam". The report is expected to publish in March 2004.

- Regarding CO_2 emissions, the government should seek international assistance measures such as CDM (Clean Development Mechanism[1]).

c. Requisite Minimum Development

The Study has made it clear that this goal can be achieved under less development requirements than the one planned in the 5th Master Plan. It is ideal to have less development from the environmental viewpoint, where the Study recommends that:

- The Government of Vietnam should carry out research on efficiency of electricity supply facilities, promote reduction of plant investments and minimize development.

d. Demand Side Management (DSM)

Since it is important and necessary to strongly promote DSM in order to control power development in a sustainable manner, the Study recommends that:

As discussed in Section 3.1, the daily load profile in Vietnam is experiencing continuous growth during the daytime peak, and the profile is expected to shift from the night-peak to the day peak type in the near future. In addition, considering historical records of neighboring countries, differences in daily and seasonal demand are forecasted to increase in accordance with economic development. Therefore, in Vietnam, it is becoming more important to reduce peak demand through active DSM measures in order to realize reduction in investment for development and improvement in facility utilization.

DSM programs are planned and implemented under DSM Phase-II as described in Section 8.2 Represented by the installation of fluorescent lamps, these programs render immediate results and are thus evaluated as appropriate for initial DSM actions. In the future, it is expected to maintain current DSM framework by first evaluating Phase-II results and expanding effective measures, and

[1] The CDM allows Annex I Parities (e.g. Japan) to implement sustainable development project activities that reduce emissions in non-Annex I Parties (e.g. Vietnam). As well as helping non-Annex I Parties work towards sustainable development, and so to contribute to the ultimate objective of the Convention, the certified emission reductions (CERs) generated by such projects can be used by Annex I Parties to help meet their own emissions targets. (modified from "caring for climate: a guide to the climate change convention and the Kyoto protocol". UNFCCC.).

second by transferring commercially viable DSM measures to private sectors.

In the meantime, DSM practices in ASEAN countries and Japan indicate that the labeling program (labeling of the energy efficiency level for air-conditioners and refrigerators) and energy efficiency consulting for large consumers could be immediately implemented in Vietnam with significant results.

Load adjustment contracts are also applicable in Vietnam as their initial investment requirement is relatively small and considerable effects are expected together with the growth of industrial and commercial demand. In order to realize detailed load management under load adjustment contracts, it is important to have access to real-time demand and supply information as well as to immediately transfer and implement dispatch instructions. Therefore, it is recommended to develop and strengthen information communication systems for the introduction of load adjustment contracts.

(2) Implementation of Environmental Considerations

In order to implement environmental considerations such as practice of an appropriate EIA, the Study recommends that:

- The Government of Vietnam should reflect on the lessons learned from the past cases of various developments in a serious manner and should apply them in the future development plans and mitigation measures.
- The Government should refer to the various references.

  The following references are important.

  - ***Environmental Assessment Guidelines***. Asian Development Bank (2003).
  - ***Dams and Development: A New Framework for Decision-Making.*** World Commission on Dams (2000).
  - ***Hydropower and the Environment: Present Context and Guidelines for Future Action.*** International Energy Agency (2000).
- The Government should allocate enough resources (i.e. human resources, time and money) to implement environmental considerations.

  It is absolutely necessary to take enough time, to assign enough and qualified personnel and to allocate enough money in order to implement appropriate environmental considerations.
- EVN should work together with other ministries and agencies.

  Regarding EIA, she should work closely with MONRE.

Regarding dam construction, it is crucial for EVN to closely work together with MARD which constructs irrigation dams. MARD has been working with the World Commission on Dams, and is formulating a report on dams in Vietnam[1]。

[1] Confluence – Newsletter of the Dams and Development Project, No.3. (July 2003). UNEP / DAMS AND DEVELOPMENT PROJECT.