



This submission to the World Commission on Dams
was presented at the Commission's
East / South-East Asia Regional Consultation

Hanoi, Vietnam
26-27 February 2000

Disclaimer - This paper was prepared as a submission to the Fourth Regional Consultation of the World Commission on Dams in Hanoi. The views, conclusions and recommendations are those of the writer and are not intended to represent the views of the Commission or the Government of Vietnam.

The World Commission on Dams
5th floor, Hycastle House
58 Loop Street
PO Box 16002
Vlaeberg
Cape Town
SOUTH AFRICA

Telephone: +27 21 426 4000
Fax: +27 21 426 0036

Website: <http://www.dams.org>

Email: info@dams.org

Vipada Apinan

Ministry of Science, Technology and Environment, Thailand

Problem & Practice on Environment and Management of Dam in Thailand

Introduction

Dam & Reservoir development project, both for irrigation and electricity directly deal with impact to natural resources, culture, public health and also to people who lived in the project area and surroundance. Although the project proponent must propose EIA reports including the mitigation plan, The environmental cost, ecological values of the damaged area and social impact on people around the sites were underestimated beforehand. Many constructed dam projects started and faced the problems relating to environmental cost, and therefore, the government must take the responsibilities on the expense for mitigation measure more than expected.

However, as experienced from many dam projects, Thailand is aware and concerned about the environmental and ecological value, and try to apply methodology in term of economic valuation to assess the environmental assets as impartial as possible.

Environmental Impact Assessment in Thailand

The Environmental Impact Assessment (EIA) process in Thailand is defined in the Enhancement and Conservation of National Environmental Quality Act 1992. The EIA procedure based more on the principle of sustainable development and prevention pays than Principle of polluter pays and is one of the most effective tools and mechanisms for environment management.

The EIA process in the Act is as follow;

Part 1 Types and sizes of projects or activities, which are required to prepare Environmental Impact Assessment reports for submission to approval from the cabinet or other relevant permitting agencies. Notification of the Minister of Science Technology and Environment define water resource development projects which are required to prepare EIA:

- Dams or Reservoir :- Storage volume 100 million cubic meters or more
:- Storage Surface area 15 square kilometers or more
- Irrigation :- Irrigated area 80,000 rais (12,800 hectares) or more.
- All types of projects :- All sizes
Located in the areas
approved by the cabinet as
Class 1B watershed area

Part 2 Approval procedure consist of two stages. First, the Office of Environmental Policy and Planning (OEPP) shall initial consider the EIA report. Second, the EIA report shall be carried out by the consideration and comments from the EIA expert committee.

The approval of private and government's project or state enterprise's project which required approval by the cabinet are different:

- a.) For private projects, when an EIA is acceptable, OEPP will forward the report together with conditions (if any) to the permitting agency for issuance of the permit or license.
- b.) Government or enterprise's projects will be approved by the cabinet, the EIA report shall be proposed to the National Environment Board (NEB) for its review and

consideration. NEB consideration is as environmental sub-cabinet. All of water resource development projects in Thailand is government and enterprise's project.

Part 3 Organization and function of OEPP and EIA expert committee as well as the National Environment Board (NEB) are defined. The Water Resource Development EIA expert committee have been composed of 3 major groups: permitting agency, specialist and Non governmental Organization. (NGO)

The Chairman of EIA expert committee for government project must be a member of the National Environment Board (NEB) and be nominated by NEB. The components of the committee are 19 representatives from the project proponent, government agency, specialist and NGOs.

Part 4 Certified and licensed specialist for preparation of the EIA reports as approved by the National Environment Board, will be eligible to prepare EIA reports.

Otherwise, the cabinet notification defined the project which has been approved by the Cabinet on March 10 and 17, 1992 to be the conservation forestry and required to prepared EIA reports for submitted to OEPP consideration. After the cabinet had notified, OEPP, the Royal Forestry Department (RFD) and related agencies had meeting and proposed procedure to NEB. The projects which must prepare EIA report are divided into 3 levels:

1. Small Project : Environmental Impact Assessment prepared as Environment items checklist and proposed to RFD
2. Medium project : prepared as Initial Environment Examinations (IEE) and proposed to OEPP.
3. Large project : defined as appeared in the Notification of the Minister of Science Technology and Environment

Environmental Impact for Large Dam Projects

Environmental problems can be defined as externality and internality. Such problems not only cause adverse effects economically but also socially and politically values. It is essential for the proponents to plan appropriately with respect to the major effects. It is important that EIA does not try to cover too much topics and details.

During the planning phase, environmental impact assessment study should be carried out concurrently with the feasibility study of the project. However, it is advisable for the proponent of the project to assign different consulting firms to under take the two studies in order to avoid the same consulting firms because of evasion conflict interest. Furthermore, public participation should be induced in the process and continued to the post implementation stage as well.

To assist the agencies in preparing such documents, OEPP has prepared environmental impact evaluation guidelines for Dam and Reservoir and irrigation project. The guidelines has taken 4 tiers into account, i.e., physical resources, ecological resources, human use value and quality of life, The recommended outline of the study consists of:

1. Project Description should include background of project such as preliminary engineering description, planning steps, located map with respect to topography and land uses and economic analysis including environmental economic analysis.

2. Existing Environment Resource in project areas and vicinity, common irrigation and agriculture project including:

- 1) Physical Resources: Hydrological, surface and ground water quality and quantity, soil suitability, sediments and erosion and climate, etc.

The construction of dams or water storages will cause changes to the Hydrologic regimes of the basin, i.e the flow rate, distribution sedimentation, etc. At the same time there is some interference to the migration of fish and might have serious effect on some fish species. The water allocation and operation of reservoir should take into consideration to reduce the interference and/or minimize the damage as much as possible.

- 2) Ecological Resources: including agriculture ecologic, forestry, wildlife flora and fauna in the project area and vicinity.

The success of water resource development must be based on ecosystem management which has to be considered in every aspects. The sustainable uses of natural resource principle should be a primary consideration. Protection of watershed area or water regulation is the primary important task. To maintain the good forest for water supply and other resources, they must understand on the ecological basis.

Presently, the world gives priority to the biological conservation. The Mekong Basin is one of the richest biodiversity because it locates in both tropical and subtropical regions. Development of any kinds mustn't affect the biological resources. Dam construction can destroy many kinds of fishes to extinction, kill many wild animals, plants and various micro-organism. Many of them are relict and endangered species. Thus, good information, not only the existing organism but also what the effects going to happen in the future, must be clearly known.

- 3) Human use values: water supply, transportation including routes of highways/railways and navigation, plantation and usage of fertilizer and pesticide and land uses, etc.
- 4) Quality of life values: socio-economic condition in the project area, employment, land tenure, resettlement, public health, recreation, archaeology and public services, etc.

Since Water Resource Projects will most likely affect the households in the project area, resettlement is an important issue to deal with the evacuees. They would worry about their lives in the new places. Both items in 3) and 4) must be related to the evacuee and resettlements area. The compensation for land, housing and construction, and plantation must be fair.

- 5) The others

There are also other effects such as salinity problem due to mismanagement in irrigation schemes as well as waterlogging caused by poor drainage. The quality of water will also be compromised by the residue of fertilizer and insecticide. Water pollution from urban centers is also an important issue for water quality control.

3. Impact Evaluation: The analysis of environmental impact should be compare parameter by parameter basis including showing the differences between with and without project conditions. The scope of assessment should be both in the short and long terms and during construction or on-going projects. The impact levels must be also pointed out especially irreversible and reversible resources.

4. Mitigation measure plan : For each adverse environmental impact mitigation plan and monitoring should be proposed with the time frame and implementations, responsible agencies as well as budget. This budget is as environmental cost to include in project cost. It should be implemented in order to both minimize adverse effects and optimize resource exploitation in project areas.

Environmental and Ecological cost

In the past, decision-making for development project including dam project depends on many factors but significant factors are benefit and cost. However, evaluation of benefit and cost of project did not consider much on environment aspects especially evacuees and ecological values. After completing the project, there were some reacts against dam project from people who face to impact, loss some lands and also decrease income. So, the government must spend the expenses to solve that problems more than cost of projects which were approved at the beginning.

From the experience, the government and researcher turn to pay attention to these issues because it is the most important to proceed dam development project.

Social Impact Assessment

Social Impact Assessment (SIA) is a tool for predicting and addressing the potential impacts of development policies, plans, projects on individual, community and the society with an emphasis on social, cultural, demographic, economic and political impacts.³ So SIA report will reflect the community needed and project proponent is able to design suitable mitigation for them.

Now SIA is a part in EIA report but OEPP try to prepare guidelines for SIA. The methodology and process must be done before or the first stage of project and pararell with public participation.

For preparation SIA, the issues that should be emphasized are :

- people that effecting from dam project and existing settlement
- Standard of living : social public service & health
- employment, production, income both tangible and intangible.
- Cultural, scenic and aesthetics.
- Community participation
- Political influence to community.

Ecological Value

Ecological value is the most difficult one to estimate. Many dam projects in Thailand and other countries are underestimated as actual value. We lost a lot of ecological value such

as genetic, rare species of flora and fauna including medical herb. However, Thailand try to adopt and apply methodology to evaluate for ecology value and adverse in economics value.

³ The Office of Environmental Policy and Planning, Ministry of Science, Technology and Environment, 1996. Guidelines for Social Impact Assessment and Public Participation Project.

There are various methodology for each resource. Such as contingent Valuation Method (CVM) or Travel Cost method (TCM). Firstly, the study must identify the natural resource start from the status area (conservation area, recreation area etc.), the use and non-use, genetic and rare species, and other useful. Then, the economic valuation on those components involves to assess. The techniques and methodology would be the better assess the full costs and benefits of the development project and decision-making.

Besides the techniques could apply to evaluate and adverse all of environmental factors in terms of economic value.

Conclusions

In summary, although the government realize the importance on environmental issues by defining the proponent to prepare EIA report. The SIA and assessment of ecological value are also significant to study. It will lead to appropriate mitigation and finally help the government decide carefully. However, at present, the guideline on the above aspects is still not clear. Thus, the procedure stated in the Constitution, such as public participation, should come into force and implement by willingness of people which is more effective.