

ENVIRONMENTAL IMPACT ASSESSMENT OF THE MEKONG DELTA WATER RESOURCES DEVELOPMENT PROJECT

PURPOSE

This case study critically examines the environmental impact assessment (EIA) completed for the South Mang Thit subproject, part of a major water resources development project being undertaken in the Mekong River Delta. Particular attention is given to the appropriateness of socio-economic impact assessment (SIA) methodology applied in ensuring that intended benefits of large development projects are realized by local communities and that undesirable impacts are effectively mitigated (e.g., development and implementation of an appropriate and equitable resettlement action plan).

ETP1 COURSE TOPIC COVERAGE:

- ▶ ENVIRONMENTAL IMPACT ASSESSMENT (EIA) PROCEDURES
- ▶ FULL-SCALE EIA
- ▶ CHALLENGES IN APPLYING EIA IN THE MRB
- ▶ SOCIO-ECONOMIC IMPACT ASSESSMENT (SIA)
- ▶ ENVIRONMENTAL SCIENCE IN THE MRB
- ▶ ENVIRONMENTAL ECONOMICS
- ▶ ENVIRONMENTAL MONITORING
- ▶ CUMULATIVE EFFECTS ASSESSMENT (CEA)
- ▶ STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

ISSUES

Specific issues highlighted by this case study are:

1. Broadening of EIA to include assessment of potential socio-economic issues in addition to natural environment issues
2. The role of EIA in clarifying expected project outputs and guiding project implementation to ensure that desired outputs are achieved while minimizing environmental impacts
3. Selection and implementation of appropriate and effective resettlement strategies

LEARNING OBJECTIVES

On completion of this case study, course participants will be able to:

- Describe the major economic activities in the South Mang Thit subproject area and the existing constraints on economic growth
- Detail the subproject components and expected benefits
- List the valued environmental components (VEC) and potential significant environmental issues (SEI)

- Identify weaknesses in the initial environmental examination (IEE), scoping and terms of reference of the EIA completed for the South Mang Thit subproject
- Discuss the appropriateness and effectiveness of mitigating measures identified in the EIA
- Identify limitations of the cost-benefit analysis completed for the subproject
- Itemize socio-economic issues considered in the EIA and suggest additional issues which should have been included
- Detail the procedures followed in assessing socio-economic issues
- Discuss available mitigation and compensation measures in response to socio-economic impacts
- Describe and critique the proposed resettlement plan

PROJECT SUMMARY

Introduction and Background

The South Mang Thit subproject is one of five high priority projects proposed as part of the Mekong Delta Water Resources Project. The latter project is part of Phase 1 of the Mekong Delta Master Plan which aims to support national development goals in Vietnam and, specifically, regional growth in the Delta region. The objectives of the project are to: (i) support primary sector development through increasing agricultural production; (ii) raise rural income and generate employment; and (iii) reduce poverty in the project area by improving living conditions. This integrated water resources development project involves infrastructure works for irrigation, drainage flood control, saline water intrusion control, navigation and rural water supply.

The South Mang Thit subproject, covering approximately 225,680 hectares of the Mekong Delta, includes most of Tra Vinh province and part of Vinh Long province. These two provinces are amongst the poorest in Vietnam with per capita income and living standards being well below the national average. Construction activities undertaken as part of the subproject include seven bridges, one hundred sluices, 55 km of riverwall and improvement or excavation of 1586 km of primary and secondary canals.

Specific construction activities and expected benefits of the South Mang Thit subproject are:

Irrigation and Drainage Development – Expansion and upgrading of irrigation and drainage works will improve water control to allow agricultural intensification and diversification. This benefit will be achieved by increasing the capacity of the main and primary canals to bring water from the Bassac and the Mekong rivers, improving existing and excavating new secondary canals, constructing sluices and culverts from secondary to tertiary canals, and developing on-farm systems.

Flood Control – Increased protection against flooding by building embankments, improvement of water logging conditions and drainage capacity through water control sluices and dykes.

Saline Water Control – Construction of sluice structures, river closures and embankments to control or reduce saline water intrusion, protect good soils and increase fresh water availability, and improvement of saline water intrusion monitoring.

Rural Water Supply – Provision of fresh water for drinking and domestic purposes to scattered rural households living in remote parts of the project areas through small central systems serving 50 - 100 households each.

Rural Transportation – Improvement of existing road networks and bridges related to the canal networks and construction of waterway transport facilities.

Institution Building and Farmer Participation – Establishment of water management institutions to be responsible for system operation and maintenance, water fee collection and to assist farmers in tertiary development. Farmer will be involved in provision of pumps and on-farm works, and tertiary system management. Training will be provided to improve system operations and management.

Overview of the Project Environmental Impact Assessment

Assessment of the South Mang Thit subproject included preparation of an EIA and an associated resettlement action plan (RAP). These tasks were completed by an international engineering and architectural firm in accordance with the World Bank guidelines for assessing major environmental impacts associated with drainage, irrigation and agricultural projects and the Vietnamese Ministry of Agriculture and Rural Development (MARD) EIA guidelines for water resource development projects.

Potential project-related environmental impacts considered in completing the EIA were:

- Increased surface water and shallow groundwater contamination from biocide, and possibly nutrients from fertilizer, applications associated with crop intensification
- Public health impacts related to an estimated 30% increase in pesticide use
- Possible effects of increasing application of biocides and fertilizers on valued environmental components (both natural and social) inside and outside the subproject area
- Requirements for resettlement and compensation
- Impediment of water transportation across the major subproject sluices

To respond to these potential impacts both an environmental action plan (EAP) and a RAP were prepared. The EAP contained recommendations for: (i) environmental mitigation; and (ii) environmental monitoring. The RAP detailed available responses to socio-economic issues.

Environmental Impact Mitigation

Recommended environmental mitigation measures contained in the EAP were:

- Expanded education program on integrated pest management (IMP) techniques for rice cultivation and farm worker safety in pesticide and herbicide application. Previous experience in applying IPM techniques elsewhere in the Mekong Delta showed that decreases in the number of pesticide applications of over 80% could be achieved while still increasing paddy production to approximately 0.7tonne/ha/year. A successful IPM program was seen as an effective means of negating expected adverse impacts.
- Operating the sluice to flush water control systems when water quality deteriorates. Depending on the subproject layouts and sluice configuration, flushing can generally be applied in the dry season by letting fresh water in at high tide and draining it out through downstream sluice during low tide.
- Implementation of the rural water supply and sanitation component under the Mekong Delta Water Resources Development project and other rural development programs sponsored by Vietnamese government and donors.
- Implementation of the RAP for people affected by the project.
- Provision of boat lifts and trans-shipment facilities near major project sluices to alleviate impediments to navigation.
- Canal excavation and disposal of dredging spoils should follow specific methods to minimize release of acids into fields, depending on the local conditions and the severity of the acid sulphate soils.

Environmental Monitoring

Recommended environmental monitoring programs contained in the EAP were:

- The proposed environmental monitoring plan is an expansion of the existing Surface Water Quality Monitoring Network. Thirty additional surface water quality monitoring stations should be added. Monitoring would consist of basic surface water quality parameters, pesticides, and bacteria and coliforms.
- A fisheries survey is proposed, focusing on the natural species composition, reproduction, and catch rates. Consideration of how alternatives to natural fishery should be developed.
- A study on rice-fish farming systems should be conducted to build on recent research and extension work on rice-fish farming systems.

Resettlement Action Plan

Anticipated environmental impacts of the subproject on terrestrial and aquatic biota, and overall biodiversity, both inside and outside the subproject area, were considered acceptable overall, largely due to the already impoverished biodiversity in the subproject area. However, since the subproject is being implemented in a highly populated area, a number of people will be affected and forced to remove. To determine the extent of impacts to local populations and resettlement needs, an inventory of families affected by sluice, bridge and dyke construction and the dredging and or widening of existing primary and secondary canals was undertaken for the South Mang Thit subproject. The inventory distinguished among categories of project-affected households as follows:

- Farmers losing less than 20% of their agricultural land holdings
- Farmers losing more than 20% of their agricultural land holdings
- Farmer losing part of their residential land
- Farmers who will lose part of their house
- Businesses of which part of the land is to be expropriated
- Businesses of which structure is affected by sluice or road construction (including embankments) but which can reorganized at the same location
- Businesses of which structure is affected and which have to relocate permanently
- Landless families living on or over the embankment and who have to relocate permanently

The inventory also surveyed jobs and incomes of people affected by the project, legality of land holdings and houses, their wishes about resettlement, number of voluntary and involuntary project-affected households and other socio-economic information of project-affected households.

A resettlement action plan was subsequently prepared for the subproject to meet both Vietnamese government and World Bank requirements. The RAP calculated and quantified compensation and rehabilitation and support measures for people affected by the project as identified in the inventory survey.

Benefit-cost analysis was only completed for individual activities of a subproject due to the difficulty of attempted a comprehensive analysis of the entire subproject – this was thought to be too difficult. For example, as part of the South Mang Thit subproject, a cost-benefit analysis was completed for the Cai Nhum Embankment and other similar construction activities. In completing the analysis, all construction costs and benefits were considered and the internal rate of return (IRR) and net present value (NPV) calculated.

SITE VISIT METHODOLOGY

Course participants will complete a two day site visit to Cai Nhum town in Vinh Long province to learn more about specific activities undertaken as part of the South Mang Thit subproject. Participants will be accompanied by resource persons who are knowledgeable about all aspects of the subproject. During the site inspection participants will have an opportunity to observe engineering works, review additional documentation, and interview local community representatives.

Participants will be organized into small groups for the site visit with each group being asked to complete specific tasks as summarized in the following table.

SUBJECT	FOCUS
Environment	Characterize pre-project environmental health What are the VECs in the subproject area? Which natural resources are at most risk? Are any endangered? What environmental impacts were considered in the subproject EIA? Do you agree with the EIA's conclusions?
Socio-Economic	Characterize the pre-project socio-economic conditions How will local communities benefit from the project? Are the benefits evenly distributed in the community? How was compensation determined? Are local people satisfied with the compensation paid?
Monitoring and Mitigation	Critique recommended mitigation measures and monitoring Did the recommended mitigation measures address all social issues? Were all environmental concerns addressed? Have all the mitigation measures been implemented? Are they successful in minimizing or avoiding anticipated impacts? Are monitoring programs being implemented? What are the results? What do they tell us?
Decision Making	Examine the rationale for the subproject What are the expected subproject benefits? Are the environmental and social impacts acceptable? Were alternatives to the subproject activities considered? What were the results of the cost-benefit analysis? How were they used? How were the results of the EIA used in decision making?

On completion of the site visit, small groups will be asked to present their findings to the class with emphasis on the practical lessons learned by participants which reinforce EIA and SIA theory taught in the course.

TAKE HOME MESSAGES

Anticipated lessons learned by the course participants in completing the case study and site visit might include:

1. Inherent limitations of cost-benefit analysis in assessing indirect costs of projects. There is a tendency in cost-benefit analysis to compare economic benefits against construction and operational costs, and possibly easily quantifiable direct environmental and social costs (e.g., compensation for land). Indirect costs are seldom properly assessed even though new approaches have been developed to estimate these costs.

2. Preparation of a comprehensive EIA is still necessary even for high priority, economically-important projects. Recommendations provided in an EIA report are useful in the project design stage to determine alternative means of undertaking the project to avoid environmental and social impacts and to ensure that appropriate mitigation measures are applied to minimize construction and operational phase impacts.
3. Follow-up and monitoring of completed projects is essential to compare predicted with actual project impacts and to assess the effectiveness of mitigation measures. Feedback provided is useful to EIA practitioners in assessing potential impacts of similar projects and to planners in guiding further developments.
4. Proper assessment of potential social impacts of projects and activities is crucial to ensuring support for the project among local communities. Effective public participation will help identify issues of concern to the local community and will guide selection of appropriate mitigation measures and acceptable resettlement and compensation plans. Although requiring additional effort in the short-term, completion of a comprehensive assessment of social (and environmental) issues according to accepted guidelines will avoid delays in project approval and implementation (e.g., donors may withhold funding for large projects if they identify gaps or inadequacies in the assessment completed).

REFERENCE READING

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