

PD-ABN-645  
92701

**UNITED STATES**

**Agency for International Development**

**The  
Thailand  
Environmental  
Project Consortia  
Experiment**

**Final Report**

**Prepared by PPA Incorporated, December ?, 1991**

## **Introduction.**

In 1990 USAID adopted a strategy for the decade of the 1990s that focuses on (a) human capital and technology (b) environment and (c) finance and infrastructure. The strategy also proposes a new program mode—namely activities based on transactions rather than on long term institution building. The changes in mode of operation reflects Thailand's relatively advanced state of development and AID's decision to experiment with an alternative approach to larger development issues.

At the time of the February 23, 1991 Coup, USAID was in the process of issuing RFPs for projects to assist the governors of Chiang Mai and the Bangkok Metropolitan Authority in developing terms of reference for environmental project bids in those cities. As part of the program evaluation, assessment and critique resulting from suspension of funding, USAID/Thailand decided to experiment with a new process that could be tied to the new Partnership Fund and provide U.S. firms with business opportunities in joint business activities with Thai government entities and private sector firms.

In July 1991 USAID/Thailand solicited technical and cost proposals from U.S. environmental engineering and/or consulting firms for the assessment of the feasibility of establishing prototype U.S. private sector led consortia for environmental infrastructure projects in the areas of solid waste disposal, hazardous waste disposal, and waste water treatment in Thailand.

USAID/Thailand recognized that U.S. environmental engineering and/or consulting firms find prototype projects of these type very risky ventures because the front end development costs to individual firms are exceptionally high in Thailand where the relevant policy, legal, and regulatory framework is changing rapidly. Taking into account this problem USAID set out to assess the feasibility of U.S. led private sector consortia that would address some of Thailand's most serious environmental problems in numerous provincial cities and tourist areas and at the same time open market opportunities for U.S. environmental firms for future systems and services throughout Thailand.

In the consortium approach, a team of American companies representing a turnkey capability to launch and complete a project—including equity investment and project operation—would bring a proposal to USAID for development funding. This team would have the following turnkey capabilities: engineering and construction, equipment suppliers, facilities operators, and investment banking finance.

This consortium experiment was designed to dovetail with the reduction in the historic delays in implementation of any large-scale public works project which has plague the country. In June, the current Thai government announced

its intention to address major environmental problems in Bangkok, Chiang Mai, Phuket, and several other cities. The government also announced its intention to speed up the bidding process and provide some of the capital costs of some of the projects.

### **Development Problem.**

This financing area has been selected because environmental problems are a potential barrier to the continued economic and social development of Thailand and solving them has become an important priority of the government and business leaders of the country. The economy of Thailand has kept growing at an impressive level. The country enjoys a large, hardworking labor force that makes it attractive for new businesses and tourism. Unfortunately the Thai environment has been abused during this early industrialization and economic development. If environmental degradation is not reversed, continued economic development will be adversely impacted.

Thailand can and should pay more attention to protecting the environment in order to have a sustainable development that accomplishes economic growth without depleting or destroying its environmental resources. Applying reasonable level of environmental protection now is costly, but doing it later in the form of rehabilitation and restoration is likely to be ten times more expensive. Additionally tourism is a key ingredient of revenue in Thailand. Poor environmental conditions will adversely impact this industry.

The top priorities are municipal sewage and solid waste projects in Bangkok and major tourist cities such as Chiang Mai, Pattaya and Phuket. The Bangkok sewage collection system, for example, is out of date and needs total redesign and rebuilding. Currently raw sewage flows into open canals and ends up in the Chaophaya River. Additionally, Thailand has no adequate process for treating hazardous wastes.

While more limited than the potentially large financings associated with the state owned telecommunications, energy, and airline companies, the consortium experiment could assist in the development of a Thai bond market. Additionally, these consortium financings will support capital projects that both benefit U.S. companies and help solve important Thai environmental problems.

### **Expected Contribution to the Goals of the Financial Markets Development Program.**

A U.S. Consortium approach to developing a Thai bond market is a second and more limited strategy for the development of debt related transactions in Thailand. The environmental project finance program has the goal of developing 2-5 project consortia in anticipation of the restart of USAID funding. These

capital support activities would provide business opportunities to U.S. firms and would also depth and breadth to the Thai capital markets—two important goals of the FMDP.

### **The Consortia Strategy.**

This strategy focuses on a critical path matching of Thai environmental problems with U.S. companies that can address those problems with a commercially profitable solution. These solutions will be turn-key projects managed by a team or consortium that provides engineering and construction, equipment supply, operating management, and financing during both feasibility study and implement phases of the project.

The key actions in this strategy have been:

1. Prioritizing the Thai environmental problems.
2. Getting U.S. input on the Thai priorities and reducing the Thai priorities to a workable number of projects.
3. A fair and open competitive process for participation in this strategy experiment.
4. Selection of project managers.

The key future actions will be:

5. Completion of project contracts.
6. Completion of projects.

In the aftermath of the February coup, PPA and USAID/Thailand identified the following seven priority projects, after consultation with representatives of the Thai Government and potential U.S. program participants.

#### Hazardous Waste

#### Solid Waste Water Treatment

1. Bangkunthien Second Phase  
at Tatcha Buri
2. Bangphli project relocated  
at Chon Buri
- 3-4.
- 5-6.
- 7

Phuket  
Chiang Mai

Phuket  
Chiang Mai  
Bangkok

## **Implementing the Consortia Strategy.**

In implementing this consortia strategy, the following steps were taken: there was a marketing outreach program designed to interest American firms in the process during the May-June period, Thailand visits by a few interested companies in early July, a Request for Proposal (RFP) was issued on July 15, and contractor selections were completed by September 14.

### The Marketing Outreach.

In order to ensure both a fair and competitive process at the outset of this program and at the same time provided for uninterrupted continuity of the strategy implementation, PPA cast the net widely for participants in the project development proposal strategy. In this competitive screening process, PPA advertised in the Wall Street Journal and met with a number of people in the Environmental Protection Agency (EPA), the Congressional Office of Technology Assessment (OTA), industry associations, and the U.S. venture capital community in order to obtain a qualified list of potentially interested participants in the consortium approach to environmental projects in Thailand.

During the May-June period PPA initiated a marketing outreach to a number of potential consortia participants. Letters explaining the consortium experiment and participant trips were sent to CEOs of 55 companies in the United States—see Attachment 1. The letters were followed up by telephone calls and meetings both in the U.S. and Thailand with interest potential participants in this experiment. Three representatives of U.S. companies visited Thailand to examine the priority projects, assess their consortia attractiveness, and critique the consortia process for the USAID management team.

### The USAID RFP and Decision Making Process, Including Selection Criteria.

On July 15 Requests For Proposals were sent to the original PPA marketing list and additional companies known by USAID/Thailand to be interested in environmental projects. The cutoff date for proposal submission was set at August 15 for proposal responses to the seven project RFP, with potentially two related projects included in each proposal.

The statement of work required successful bidders to prepare a report assessing the feasibility of engaging U.S. led private sector consortia to undertake specific environmental infrastructure projects in Thailand. The contractor's report, a Project Development Proposal will be a framework analysis or development proposal and include the following elements:

1. Environmental project concept.
2. Why this is a priority project.
3. Commercial feasibility - preliminary
4. Technical feasibility - preliminary
5. Financing structure - preliminary
6. Organizational structure - members of the consortium are selected and committed to 7 (below).
7. Steps for feasibility study and project implementation.

The evaluation and selection committee consisted of a team of USAID/Thailand employees, headed by Program Officer Peter Thorman, who had participated in the development of the consortium strategy.

Proposal Evaluation Criteria.

The RFP decision making process included the following proposal evaluation criteria

Criteria	Points
1. Experience in technical aspects of proposed environmental infrastructure project(s)	30
2. Experience in developing joint ventures business alliances or multicompany projects	20
3. Experience in successful design and implementation of governmental projects	20
4. Experience in project finance	10
5. Cost	20
 Total points	 100

At the request of the Contract and Program Officers PPA provided some elaboration on how each of the criteria might be evaluated. These suggestions were as follows:

In evaluating the proposals, USAID should consider the proposers' capabilities to organize a turnkey project. These capabilities are: project assessment and planning, engineering, construction, equipment supply, facilities operations, and project financing.

Although it will be very difficult to assess from reading a written proposal, a proposer should also have the ability to be a catalyst in organizing the consortium—this is what we have referred to as the "bus driver" or deal

making function that will drive the project to successful implementation. This catalyst, bus driver, or deal maker will be a key factor in the success of the consortium's strategy and he/she should be an American.

Although evidence of these capabilities in the proposals is not a listed evaluation criterion, a proposal should be considered the comparatively superior proposal if it contains evidence of more of these capabilities than competing proposals. The more elements of a successful turnkey project the proposer has at the beginning of the work on the Project Development Proposal Strategy the higher will be the proposer's probability of developing a successful implementation strategy. Additionally, joint proposals which include more than one firm and most or all of these capabilities will be a strong indication that the proposer(s) have carefully thought through what will be required to achieve ultimate success with their strategy.

The proposals may come from individual companies or groups of companies that complement each other and enable them to submit proposals that address all of the proposal evaluation criteria. Whatever the proposer configuration, the proposal should score well on the combination of the following evaluation criteria.

1. The proposer should have experience in the technical aspects of the proposed environmental infrastructure project(s). This should include—not necessarily within a single company framework—qualifications for environmental planning and analysis, engineering, and project management. The company or group of companies that submit the winning proposal should have a clearly demonstrated ability to turn-key projects of a similar scope and technical difficulty.

2. The proposer should have successful experience in developing joint ventures, business alliances, or multicompany projects. Corporate cultures frequently vary significantly among American companies. Many American firms are very good at competing with each other but have had little successful experience cooperating with other companies in an alliance that requires shared decision-making and an ability to adjust to a different corporate culture. The proposal should contain solid evidence that the proposer has worked harmoniously with other U.S. companies in successful project implementation.

3. It will also be important for the company or group of companies to have a key person who has worked on the successful implementation of government contracts. Doing business in Thailand is a time consuming process, particularly when one or more levels of government are involved. Therefore, proposers should have the patience that can only be acquired with successful experience in implementing similar government or government related environmental projects in the United States.

4. Frequently—but not always—a firm that has successfully organized

project financings plays the catalyst role that brings the other members to the project. Project finance experience is therefore an important evaluation criterion. It is only given a 10 point weighting because financing of these projects is not likely to be the key barrier to success of the project development strategy. The RTG has recently indicated that it will consider underwriting the capital costs of the projects covered in these RFPs. Additionally, the IFCT is interested in arranging and participating in environmentally related financings. Nevertheless, the proposal information relating to this criterion should be carefully examined for evidence of the proposer's ability to act as a successful catalyst in organizing and completing project financings.

5. While the cost of the proposal has a 20 point rating, this criterion should be considered in a qualitative rather than absolutely comparative context. Costs will be lower to the extent that the proposers anticipate using only one person to create the project development strategy. Conversely, costs will be higher to the extent that the proposers plan on involving several people with different disciplines and abilities in the formation of the project development strategy. In this context, a higher cost proposal that contains the components of a consortium may in fact be more valuable to this USAID experiment than a simple "one person" proposal, and this possibility should be considered in evaluating this criterion. Cost should be evaluated on a relative-comparison basis not an absolute-comparison basis.

### The Results of the RFP.

The market outreach and decision making process resulted in the submission of 45 proposals by 18 firms. These results were significantly greater than anyone associated with this experiment anticipated and created a heavy work load for the evaluation committee. Nevertheless the proposals were evaluated, the selections were made, and the contracts were awarded by September 14—within the time-line established for this phase of the Consortium Experiment.

The evaluation committee selected three firms and five projects. The three firms and the projects were a consortium lead by Asia Badger Inc. for the two hazardous waste projects, Metcalf & Eddy's Phuket wastewater treatment project, and Camp Dresser & McKee International's Phuket and Chaing Mai solid waste management projects.

Because of Fiscal 1991 funding limitations only two of firms received funded contracts by September 14. The two funded proposal are summarized in the following section of this report.

1. The two hazardous waste projects were bundled into one proposal which was submitted by a consortium of Asia Badger Inc., International Technology

Corporation, and Taylor-DeJongh, Inc. Their proposal—Project Plan for Thailand Hazardous Waste Treatment Facilities—was selected by the USAID for funding.

The following material summarizes the highlights of the Asia Badger Inc., International Technology Corporation, and Taylor-DeJongh, Inc. proposal:

This investigation will examine the waste profile which is being generated at the present time and anticipated in the foreseeable future. This investigation will lead to the preparation of a Project Development Proposal which will outline various options for treatment of Thailand's hazardous waste and will discuss technical, commercial and financing issues associated with the various options.

Asia Badger, Inc. is a subsidiary of The Badger Company, Inc. an international full-service engineer-constructor. Asia Badger has extensive experience of providing environmental services to industrial clients. Asia Badger has worked in the Southeast Asia region on numerous projects both as the prime contractor and in collaboration with other contractors. Asia Badger is currently executing several projects in Southeast Asia.

IT-McGill Pollution Control Systems Inc. (IT-McGill) is a division of International Technologies Corporation, a leading environmental engineering firm, providing comprehensive services for the treatment of hazardous waste and restoration of air, land, and water resources. IT-McGill capabilities include engineering construction, program management, and operation of facilities. For this project IT-McGill will examine possibilities for incineration of various hazardous wastes in Thailand. IT-McGill has developed numerous proprietary incineration technologies and can offer the right combination of technologies for the specific wastes which are identified during the investigation effort covered by this proposal.

Taylor-DeJongh has ten years experience as a firm in providing project financing and major capital project structuring advisory services primarily in conjunction with engineering contractors and developers for projects in developing countries throughout the world. Taylor-DeJongh is currently arranging, negotiating, and advising on the structuring of projects totalling more than \$1.5 billion in total capital.

There is currently an acute lack of hazardous waste treatment facilities in Thailand largely due to confusion regarding the economic method to solve specific problems. Asia Badger and IT-McGill propose to examine several different categories of hazardous waste as follows:

1. Effluent water from mining and manufacturing wastes containing metals.
2. Effluent water containing oily wastes (primarily refinery and manufacturing effluent).

3. Organic wastes such as solvents spent and/or contaminated process fluids.
4. Toxic wastes (such as PCB s pesticides, medical wastes).
5. Sludges which result from all of the above sources.

In general Badger recommends in-process abatement to be located at the hazardous waste generator's facility. This in-process approach affords better operator control and provides accountability for any hazardous wastes which eventually leave the site. However in certain applications a centralized facility is more economic and manageable than in-process treatment. This is especially true when considering the use of incineration technology for destruction of hazardous wastes. Badger and IT-McGill propose to identify the best treatment method for the various wastes being generated and to identify the most cost effective combination of technologies for the waste profiles involved.

The effort proposed by the association team will result in a project plan that brings the Thailand hazardous waste treatment program into focus. The technical plan will sequentially outline the types of plants required and the operation steps necessary to fully implement the project. The framework developed in the technical plan will be supported by the commercial and financial plans.

The commercial plan will identify the key elements necessary for projecting investment requirements and revenue projections. It will also address the need for sales and market development with waste generators.

The financial plan will not only identify potential financing sources, but will serve as the beginning of a dialogue with the sources. During the next phase pro-forma letters of commitment might be solicited which would allow the project to proceed on a productive basis with conceptual engineering of specific facilities.

The association team will produce a comprehensive Project Development Proposal which will build upon all existing technical data and which will recommend the most viable implementation plan for in-process hazardous waste control as well as each of the two critical hazardous waste treatment projects. The final Project Development Proposal will blend technical, commercial and financing feasibilities into a specific implementation approach. The association team must emphasize that this is not a typical technical feasibility study. We have combined the considerable range of resources and experience of our team members so that our work-product will be an actual implementation plan. The final report entitled "Project Development Plan" will identify specific next-steps, schedule, and likely costs, and a financing plan based upon the most viable commercial structure (e.g. "build-own-operate" or government owned with private operations and maintenance).

2. The Metcalf & Eddy International, Inc. proposal—Assessment of the Feasibility of Establishing Prototype Private Sector Consortia for Wastewater Treatment Projects—Phuket—was also selected by USAID for funding.

The following material summarizes the highlights of the Metcalf & Eddy proposal:

Since its formation in 1907, Metcalf & Eddy has become a pioneer in every aspect of the wastewater field. Through its design of more than 250 wastewater treatment plants, M&E is thoroughly familiar with state-of-the-art treatment processes and equipment. In addition, M&E has gained substantial experience in privatization through its work financing, designing, building, and operating privatized facilities along the eastern seaboard of the United States.

For this proposed project, Metcalf & Eddy will make use of this background, as well as its experience in Thailand, to prepare a report that assesses the feasibility of engaging U.S.-led private sector consortia to undertake environmental infrastructure projects in the city of Phuket. This conceptual report will establish the preliminary commercial and technical feasibility, as well as the financial structure, of these infrastructure projects. In addition, M&E will develop the steps for a full feasibility study and eventual project implementation.

Metcalf & Eddy has a successful history of doing similar work in Thailand and other developing countries. The firm, in association with the Bangkok-based Consulting Engineers Company, has the necessary resources to carry out this project on schedule and the experience to provide an outstanding professional product within USAID's budget.

Initially, an environmental project concept will be developed to define the wastewater treatment needs for Phuket. This task will involve a detailed analysis of the environmental and health issues facing the community if current pollution trends are not corrected. A project priority, based on current problems, anticipated growth and impacts on the community, will be determined within the context of the project. Commercial, technical, and financing issues will be investigated and presented for the various main sections of Phuket and for proposed growth areas, including residential, industrial, and commercial contributors to the wastewater system.

An organizational structure for addressing the total wastewater program will be developed for the use of Phuket, central government agencies, and other interested parties. To help in the understanding of the problem(s), a detailed task breakdown will be developed for the complete feasibility study from the initial phases to the end of the deliverables. Included in the task breakdown will be direct tie-in to the project implementation plans, which will be time scaled, and a preliminary cost analysis provided for the major items defined in the implementation plan.

### The Team Workplans.

ADD after meetings with Badger and M&E in the U.S. in November.

### Next Steps to be Taken When the USAID Program Resumes Full Operation.

The actual results of these two experimental projects will not be available for evaluation until February or March of 1992. Assuming that the elections which will enable the USAID program to resume funding in Thailand take place in April 1992, these two Project Development Plans could be very timely.

The USAID management team should work very closely with both contractors in the final stages of their preparation consortium strategies to ensure that a useable strategy is produced—one that has a good chance for a successful implementation of an important private sector led environmental project.

As part of this close working relationship, USAID should find a way to resolve the need for a counterpart Thai government requirement for RFPs for the development of terms of reference for competitive bids for these projects in a way that does not preempt a U.S. led consortia solutions. When the coup resulted in the suspension of funding for Thai government projects, it was possible to move forward with this consortia strategy experiment. At an early stage in the contractors' preliminary assessment work, it was learned that government entities which will make the decisions to move forward on these projects will require technical assistance in preparing the bid process. USAID should explore the possibility of funding a qualified U.S. engineering firm—ideally a U.S. competitor of these contractors—to provide a human resources capability to assist the appropriate Thai government entities in preparing for the competitive bids on these projects and evaluating them once they are received on a timely basis.

If this bid preparation can be resolved on a timely basis and the USAID management team concludes that the two Project Development Plans are likely to be both winners and successfully executed, then USAID should fund the next stage of the process which the contractors will outline for implementing their consortia strategies.