

Energy Technology Innovation Project

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September 14, 1992

MEMORANDUM

TO: R&D/EI, Samuel Schweitzer

FROM: ETIP, Frederick Karlson *F. Karlson*

SUBJECT: Final Report - Clean Coal Technology Trade Mission to ASEAN

Attached is the final report covering ETIP's activities for the Clean Coal Technology (CCT) Trade Mission to ASEAN. This report reflects the comments received from A.I.D., DOE, and industry participants. There has been considerable interagency discussions on the means to sustain and build upon the success of the mission. In particular, two projects appear to be gathering support: SO₂ emissions reduction through duct injection at Thailand's Mae Moh Power Station; and, coal upgrade in Indonesia.

Please advise if additional information is needed.

Attachment

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MISSION REPORT

**U.S. COAL TECHNOLOGY MISSION
TO THAILAND AND INDONESIA:**

**Thailand: June 20 - June 25, 1992
Indonesia: June 26 - July 1, 1992**

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I. INTRODUCTION

The *U.S. Coal Technology Mission* visited Thailand June 20 -25, 1992, and Indonesia June 26 - July 1, 1992, to promote American advanced coal technologies and related services in these two countries. Thailand and Indonesia were selected for this high-level technical mission because of their strong market potential for the kinds of technologies, electric power equipment, and services offered by U.S. firms. The trade mission was led by Jack Siegel, Deputy Assistant Secretary for Coal Technology at the U.S. Department of Energy (DOE), Richard Johnston, Deputy Assistant Secretary for International Economic Policy at the Department of Commerce (DOC), and Robert Driscoll, President of the U.S. - ASEAN Council.

The trade mission was composed of executives from eight U.S. companies, representatives from the U.S.-ASEAN Council, and officials from DOE, DOC, the Agency for International Development (AID), and the U.S. Trade Development Program (TDP). Appendix 1 lists participants on the mission.

The complementary business-government relationship which characterized the planning and execution of the *Coal Technology Mission* should serve as a model for conducting future business development missions. The objective of the mission to foster identifiable market opportunities for technology transfer was achieved through open business to government communication, interagency support of company objectives and company to company communication.

II. EXECUTIVE SUMMARY

Specific follow-up actions have been developed to translate identified market opportunities into business development for U.S. companies. The effective implementation of these actions necessitates a continued close coordination and joint efforts by government and business.

The Trade Promotion Coordinating Committee's (TPCC) Coal Technology Export Subgroup and the U.S. - ASEAN Council's Coal Technology Industry Core Group will identify and implement follow-up actions. Appendix 4 provides further details on these committees. An ongoing business-government exchange will provide the focussed, coordinated implementation plan to best support U.S. coal technology companies. In-country support from the U.S. Foreign Commercial Service and Private Investment and Trade Opportunities (PITO) project will continue to be an integral part of post-mission follow-up, as specific programs are implemented.

Follow-up Actions

The following is a list of priority follow-up actions as identified by the eight companies who participated on the *Coal Technology Mission* to Thailand and Indonesia. Coordinated follow-up efforts will focus on these actions. As conditions/opportunities change, specific follow-up actions will be added based on ongoing business-government dialogue.

THAILAND:

1. Implement coordinated U.S. Government (USG) support to facilitate U.S. bids for the Mae Moh Flue Gas Desulfurization (FGD) bid within the present bidding schedule.

Rationale:

It is anticipated that FGD will be used extensively throughout Asia in the coming years. The winner of the Mae Moh bid will have a competitive advantage on others in future FGD bids in the region. The Japanese and German Governments are reported to be supporting their companies bidding on projects. To level the playing field, the U.S. Government needs to offer assistance to U.S. companies.

2. Mobilize USG support for US companies for the fluidized bed combustion (FBC) projects going out for bids for the Mae Khan facility.

Rationale:

The U.S. is the world leader in this technology. Many market opportunities exist for the use of FBC technology throughout Asia. U.S. industry experience in Thailand could open many other market opportunities.

3. Reverse mission focussing on flue gas desulfurization (FGD) at an existing site(s) or one selected as a potential demonstration project.

Rationale:

Focussed, carefully planned reverse missions are an important market development tool. These missions must be part of an effort to give a competitive edge to U.S. companies in winning FGD bids in Asia. The U.S. has more experience than any country on the use of FGDs and site visits to U.S. facilities may be influential in determining the choice of technologies.

4. Demonstration project focussing on lime injection for SO_x reduction at Mae Moh lignite plants. An alternative could be a demonstration fluid bed (AFBC) unit at Pontianak plant. The project could showcase the DOE's U.S. Clean Coal Demonstration Program and the U.S. - Asia Environmental Partnership.

Rationale:

The technology is a low capital cost method of controlling SO₂ from existing coal-fired units. SO₂ is becoming a major concern in Asia. The demonstration could lead to contracts to install the technology at the remaining Mae Moh plants and could give the U.S. a regional competitive advantage.

INDONESIA:

1. Position US companies to compete on bids for small fluidized bed combustion (FBC) remote site boilers off Java, including assessment of this technology for alternative fuels, such as peat, to replace diesel.

Rationale:

Indonesia currently plans several small coal and peat fired units to provide electricity and steam where interconnection is impractical. Small scale (up to 65 MWe) FBC boilers are ideally suited

for these needs. Further, the adaptability of these boilers to a range of fuels can make them cost-competitive for the variety of fuel qualities and types that are planned for these units.

2. Identify/support US company bids for integrated gasification combined cycle (IGCC) projects.

Rationale:

IGCC may be the ultimate coal-based power generation technology. In the rapidly developing Asian region, a few pilot projects could lead to very large market opportunities.

3. Demonstration project on coal conversion technology, highlighting the most efficient use of coal or lignite. The project will showcase the DOE's U.S. Clean Coal Technology Demonstration Program and the U.S. - Asian Environmental Partnership.

Rationale:

Indonesia will be a leader in Asia in the use and export of coal. U.S. coal conversion technologies will have particular application because of the large distances between the coal mines and the major power plants on Java.

4. Reverse mission focussing on coal conversion technology at a site(s) selected for a potential demonstration project.

Rationale:

The U.S. is demonstrating technology for the conversion of coal to liquid form. Indonesia, with large quantities of coal and dwindling liquid fuel supplies, may find these technologies attractive in meeting its energy mix requirements.

THAILAND and INDONESIA:

- Provide better, advance intelligence on upcoming power generation opportunities. Consideration should be given to having an interagency representative in-country to closely monitor and provide detailed information, with requisite advance notice, on energy issues and projects.

Rationale:

Critical to success in winning projects is early information on new trends, changing requirements, and future plans of governments and utilities. Such advance knowledge can be critical in early market development efforts, and in the competitive positioning of U.S. technologies. A person who devotes considerable time in-country to identify and communicate opportunities could result in the U.S. winning a higher percentage of bids.

- Continue and expand TDP and AID financing for feasibility studies and engineering design.

Rationale:

U.S. Government support for feasibility studies and engineering design has given American companies a competitive edge on major projects, resulting in increased exports of U.S. services and equipment. Funding for these programs should be increased.

- Increase efforts to ensure U.S. firms are not disadvantaged by concessional financing.

Rationale:

Concessional financing, particularly for environmentally oriented projects, places U.S. firms at a competitive disadvantage. The USG must recognize this problem and develop a program to level the playing field.

- Link USG assistance for technical assistance and training to selection of U.S. services and equipment. However, such assistance should be conditioned on successful bids by U.S. companies.

Rationale:

The availability of training paid for by the U.S. Government may tip the balance in favor of a U.S. company being selected.

- Develop a complementary strategy of actions for the upcoming U.S.-ASEAN Council and U.S. DOC environmental missions.

Rationale:

Environmental issues are driving utilization of clean coal technologies in Asia. Environmental missions should support the objectives of the clean coal technology effort in Asia.

The U.S. - ASEAN Council's Coal Technology Industry Core Group will meet with the Trade Promotion Coordinating Committee (TPCC) Coal Technology Export Subgroup within two weeks and provide a specific plan for accomplishment of these recommendations. This will allow a window of opportunity for mission participants to comment on this final report.

APPENDIX 1

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APPENDIX 2

MISSION OBJECTIVES

The *Coal Technology Mission* had several goals, including the following:

A. Business Development

- Assess the market potential for and obstacles to the use of U.S. coal technologies;
- Support efforts of U.S. coal technology companies to identify opportunities and secure contracts in Indonesia and Thailand, and help maintain a long-term presence in these markets;
- Develop ties with/among USG agencies operating in these countries as a basis for future DOE coal technology export activities;
- Prepare a focussed plan of follow-up actions for USG support of company initiatives, in cooperation with private industry, to enhance the commercial presence of U.S. coal technologies in Asia.

B. Government to Government Linkages

During the course of the trade mission various USG officials held related meetings with their Thai and Indonesian counterparts to discuss, on a government-to-government basis, other ways for American coal technologies to penetrate these markets. Some of these goals were:

- Inform host country officials and others of the current status and future direction of DOE's Clean Coal Demonstration Program;
- Demonstrate that the USG is interested in the long-term well-being of, and in having a long-term relationship with, Thailand and Indonesia;
- Demonstrate U.S. leadership in coal technology;
- Understand the factors that influence project decision-making by host Government officials;
- Identify and seek to eliminate impediments and barriers to the development of clean coal technologies;
- Exhibit USG support for American companies as world leaders and reliable partners in clean coal technology projects.

These meetings generated some key insights into the coal technology markets in Thailand and Indonesia, as described in Appendix 3.

APPENDIX 3

COUNTRY MARKET OVERVIEWS

THAILAND: MARKET OPPORTUNITIES¹

Thailand's rapidly growing economy has led to increasing needs for energy in general, and electric power in particular. Accompanying Thailand's economic and energy boom has been an increasing sensitivity to providing an adequate infrastructure to continued growth, and a new importance attached to the environmental consequences of higher rates of fossil fuel use. These broad trends in conjunction with EGAT's current use of coal for electric power generation as well as its projected reliance upon both indigenous and imported coals for new generating capacity make Thailand a significant market for U.S. firms involved in electric power and coal/lignite related equipment, services, and technologies.

During fiscal year 1991, EGAT's generating capacity grew 13.4% to 8,045 MW. Natural gas fired plants accounted for 40% (3,200 MW) of this capacity, followed by lignite 26% (2,100 MW), fuel oil 24% (1,900 MW), hydro 9% (700 MW), and purchased power 1% (80 MW), (mostly imports from Laos). Negligible amounts of power were also provided by geothermal, solar, and wind energy. Between 1992 and 1996, EGAT calculates under its Seventh Plan that it must add approximately 4,500 MW in installed capacity, consisting of approximately 2,289 MW in dual fired oil/gas plants, 1,000 MW in gas turbines, 600 MW in lignite plants, and 436 MW of hydro. Meanwhile, 132 MW capacity will be retired. Thus, EGAT plans to add an average of 1,000 MW in generating capacity over the next five years, with further increases over the longer term.

By the year 2006, EGAT plans to have installed capacity of 31,051 MW. This would be comprised of 6000 MW of coal fired capacity (19% share), 5775 MW of lignite fired capacity (19% share), 4431 MW of hydro (14% share), 4200 MW of coal/oil dual fired capacity (14% share), 3780 of gas/oil capacity (12%), 3565 MW of combined cycle (12% share), 2000 MW from nuclear (6% share), and 1300 MW of geothermal peaking power (4% share.) Thus, according to these figures supplied by EGAT, coal's share in the electric power sector could increase from 26% in 1991 (i.e., lignite), to 38% of total capacity within the next 15 years. This tremendous growth in coal use anticipated is by no means guaranteed in as much as EGAT could pursue other options and strategies in its generation expansion program. For example, in addition to having its own coal mining operations, EGAT explores and develops hydro sites. As a matter of policy, EGAT is encouraging the importation of natural gas by pipeline and in the form of imported LNG to replace heavy oil in power generation. For the first time, nuclear power is also being examined as a possible option. Moreover, as a state enterprise, EGAT operates in accordance with governmental policy promises and procurement guidelines, including financing issues and the sanctioning of private power projects.

¹ Statistics cited in this report provided by EGAT Thailand

EGAT PROJECTS

Project	Capacity (MW)	Launch	Completion	Costs (M. Baht)	Remarks
<i>Projects under implementation</i>					
Mae Moh Thermal Power Plant:				35,166.6	
: Unit 12	300	Jan. 1991	Apr. 1996		
: Unit 13	300		Oct. 1996		
Rayong Combined Cycle Power Plant:					
: Blocks 1-3	3x308		Completed		
: Block 4	308		Mar. 1994		
Nam Phong Combined Cycle Power Plant (Khon Kaen)	355		Completed		2x121 gas turbine turbine 113 steam
Bhumibol Hydro Power Plant, Unit 8	175	Dec. 1992	Feb. 1996	2,350	
Sirikit Hydro Power Plant, Unit 4	500	Mar. 1991	Nov. 1995	1,245	
Pak Mun Hydro Power Plant (Ubon Rachathani), Units 1-4	4x34	Mar. 1991	Nov. 1994	6,600	
<i>Projects under Preparatory Stage</i>					
South Bangkok Thermal Power Plant, Block 1	300	1991	1994	8,519.37	
Ao Phai Thermal Power Plant (Sri Racha, Chon Buri)	4x700	1996		37,885.08	Detail is under feasibility study to be approved by cabinet.

The attached two tables list individual projects currently ongoing and planned by EGAT for the future. These projects comprise the seventh plan period (1992-1996) as well as the Long Term Power Development Plan (PDP).

Several projects listed warrant special attention. For example, the Ao Phai power plant project consists of 4 units on a site large enough to ultimately accommodate 6 units. These units were originally planned to use coal. EGAT is considering that it may be more economical to defer the cost of using coal due to the expense of having to add flue gas desulfurization, coal handling facilities, and new port construction facilities. However, no final decision has been made as to whether oil or coal- or a combination of both- will be used to fuel the units (as of Aug. 13, 1992).

It is not clear the how the pending decisions by EGAT for Ao Phai will affect other coal-fired plants planned, such as the Mae Kham fluidized bed units 1 and 2 located adjacent to the Mae Kham reservoir at Mae Moh. However, EGAT remains interested in advanced coal technologies and is not likely to proceed with its expansion plans without careful analysis of alternative fuels and technologies, as well as consideration of comparative economics.

Despite these uncertainties, coal and clean coal technologies represent an important market opportunity for U.S. firms for both retrofit and new plant construction projects. This assessment is based partly on the momentum behind EGAT's active mine development program at Mae Moh, Krabi, Saba Yoi, and Wiang Haeng. In addition, it is generally accepted that Thailand will become a significant importer of coal. For example, in 1991 EGAT consumed 10.4 million metric tons (mmt) of coal, all domestic lignite. This figure is expected to rise to 13.8 mmt by 1996. By 2001, EGAT alone is expected to require 32.2 mmt of lignite and 3.4 mt of imported coal. The figures for 2006 are 35.3 mt and 23.3 mt of imported coal.

Another factor pointing towards Thailand's growing need for clean coal technologies is the Royal Thai Government's desire to accelerate the use of CCT to reduce emissions of sulphur dioxide. Some sources believe that sorbent duct injection for the existing plants at Mae Moh and Atmospheric Fluidized-Bed Combustion (AFBC) process for new lignite-fired plants have a favorable potential. It is expected that the monitoring of EGAT plant emissions and the need to conform to Thailand's environmental standards make the use of clean coal technologies an inevitable course. In addition, U.S. firms' technical and engineering skills are viewed favorably in this regard. Some project opportunities could also arise in the general areas of private power, demand side management, and co-generation.

Project	Capacity (MW)	Launch	Completion	Costs (M. Baht)	Remarks
<i>Projects under Preparatory Stage (Cont.)</i>					
Khanom Combined Cycle Power Plant (Nakhon Sri Thammarat)	600	1992	1995	16,077.03	two turbine generators
Kaeng Krung Hydro Power Plant (Surat Thani)	178 million kWh/year	Mar. 1990		3,110	Project approved by the cabinet in March 1990

Projects under planning (to be implemented during 7th Plan)

Lamtakong Hydro Power Plant (4 units)	1,000				
Mae La Luang Hydro Power Plant	160				
Wang Noi Power Plant	1,000				
Mae Kham Power Plant (Lignite fired)	300				
Ao Phai Plant (2nd, 3rd, and 4th units)	2,100				
Sabayoi Power Plant	600				
Mae Taeng Hydro Power Plant (2 units)	26				

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INDONESIA: MARKET OPPORTUNITIES²

With one of the world's fastest growing rates of electricity demand (17%), an abundance of domestic coal, and a national energy policy objective of reserving oil and gas resources for export, Indonesia represents a tremendous, long-term market for U.S. coal technologies. These opportunities exist not only in terms of doing business with PLN, and other coal users, but also in terms of private power. Indeed, PLN's inability to keep pace with the nation's rapid growth in electricity requirements has resulted in PLN's generating capacity of approximately 10,000 MW being almost evenly matched by an estimated 8,000 MW of private generation for self-use that is not connected to the grid.

Indonesia's estimated 32 billion tons in coal resources has a reserve life of several hundred years—considerably longer than the reserve life of its oil and gas resources of 19 and 42 years, respectively. Much of this coal is lignite/sub-bituminous quality however, and much of its coal is low in sulphur and ash but high in moisture. About two-thirds of the nation's coal is located in Sumatra with most of the remaining supplies in Kalimantan. Meanwhile, most of Indonesia's energy demand, particularly for coal, is located on the island of Java thereby making inter-island transport and infrastructure design/costs significant concerns in domestic coal usage. Indeed, there may evolve a number of mine-mouth plants due in part to the costs and energy requirements of transporting across great distances from the mine to the power plant.

Although commercial coal mining began more than a century ago, annual production did not exceed 10 million tons until 1990. Coal mining in 1991 grew by almost one-third and by 2000 is projected to exceed 50 million tons and perhaps reach 100 mt; a significant portion of which will be exported. By 1998/1999 PLN alone expects to be consuming 29 mmt of coal per year.

The PLN electricity generation and distribution system is essentially composed of two parts: the Java-Bali grid comprising the bulk of the nation's demand for power, and the rest of the country for which there is no interconnected grid, but instead a large number of small distribution systems. This is due in part to the fact that Indonesia is an archipelago nation consisting of about 17,000 islands. This means that small diesel powered generating units are likely to remain important to the power sector outside the Java-Bali grid, especially in remote areas. Thus, the need for advanced coal technologies for base load power plants revolves primarily around the Java-Bali grid with the exception of proposals for some coal-fired power in Sumatra to be interconnected with Java through a sub-sea transmission line.

Coal has just begun to be used on a significant scale for power generation and is forecast to increase dramatically in the future. The primary coal fired plant is at Suralaya (4 x 400 MW) which obtains coal from the Bukit Asam mine in South Sumatra. Suralaya currently accounts for about 40% of the base load capacity on the Java-Bali grid, and three additional 600 MW units are planned. There are also two 65 MW mine mouth units in Sumatra but the biggest project ongoing is at Paiton in East Java. At Paiton 4 x 400 MW PLN units and 4 x 600 MW private power units will likely use Kalimantan coal once they have been completed. Winning contracts for the Paiton projects and the Suralaya expansion is a major goal of U.S. firms.

Opportunities for coal plants in Kalimantan are not large since they are likely to be dispersed, low-load units, and must compete with relatively cheap and abundant natural gas produced locally. Although plans

² Statistics cited in this market overview provided by PLN Indonesia

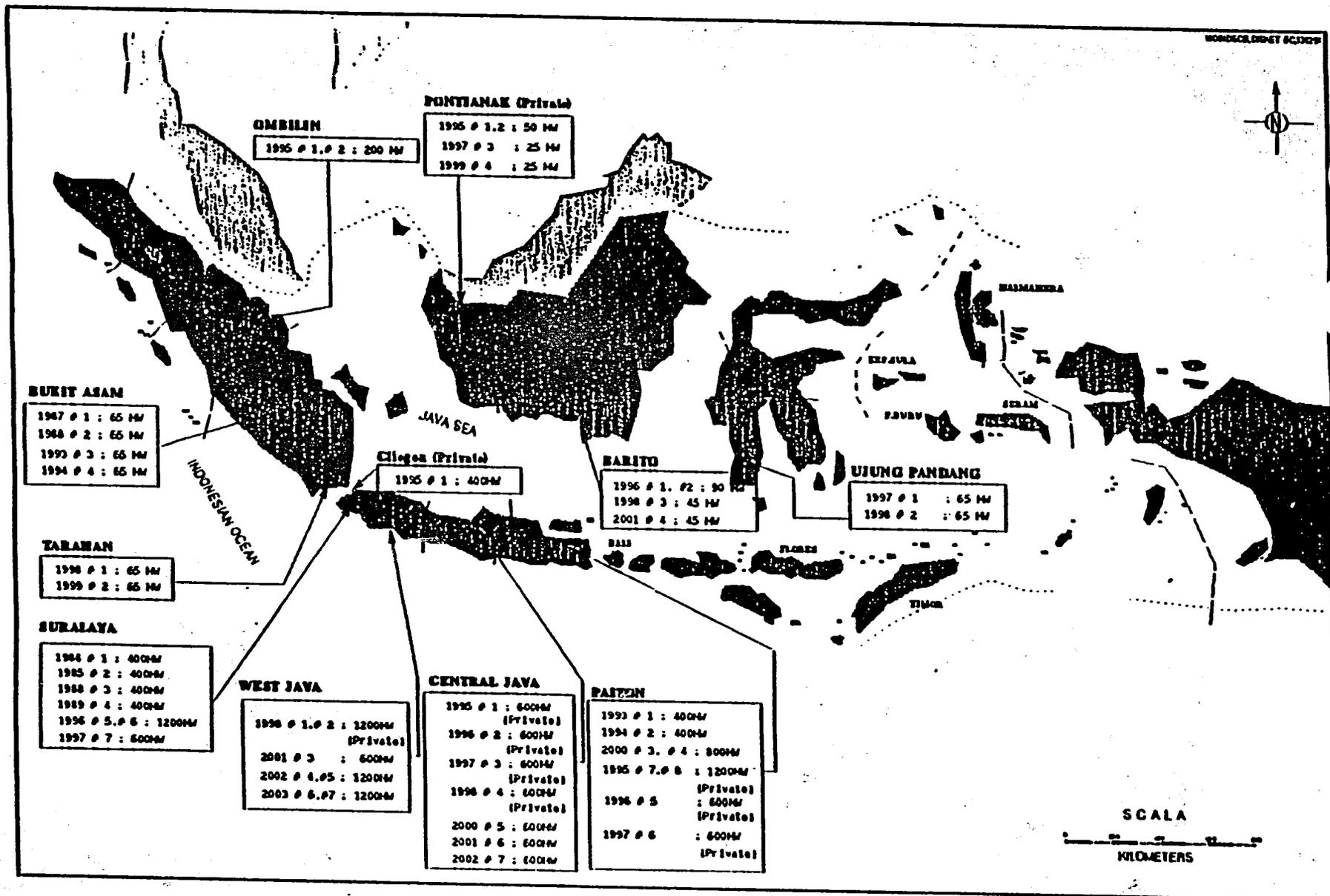
exist for more mine-mouth plants in Sumatra, they are unlikely to be large base-load units. There may be some 65 MW plants built in Sulawesi and a number of large plants are proposed for Java around the turn of the century. By the year 2000 the Government of Indonesia hopes to have 20,000 MW of coal-fired generating capacity, a substantial increase over the current figure.

About 80 % of Indonesia's demand for coal is and will be for electric power generation but as coal use rises, so will concerns about its environmental impact. Scrubbers have yet to be installed in Indonesia, although they are envisioned for Paiton units 5, 6, 7, and 8. Meanwhile, despite a concerted environmental effort, ambient air quality and emission standards are unclear, and these uncertainties only serve to delay the development of coal fired-power projects. In addition, one of the arguments offered in favor of the proposed nuclear plant on Java is the lack of carbon dioxide emissions as opposed to fossil fuel plants. It should be noted, however, that reductions in SOx, NOx, and carbon dioxide are presently of much lower priority than economic growth.

But Indonesia is clearly interested in clean coal technology, as reflected in government-to-government and government-to-business discussions, the coal combustion facility at Puspitek funded by AID, and by the interest displayed by PLN officials. In fact, one of the five principles of Indonesia's "Coal Development Policy" is that "clean coal technology is to be mastered through research and development, and education and training." Indonesia's interest in CCT is on thermal efficiency as well as environmental protection, particularly for fluidized bed units. However, despite the expectation that coal will play a major role in Indonesia's future, in the case of PLN, it has been pointed out that although coal represents a least-cost solution for the generation of base-load power (gas is cheaper for smaller units, and is valuable as an export commodity), as a state-owned enterprise, PLN will base its decisions on least cost except where the government dictates that other factors must be taken into account.

Indonesian officials further recognize that coal-fired plants can be more complex undertakings than oil, gas, and hydro plants in terms of equipment, engineering, and construction. Capital costs for coal plants tend to be higher too, although operating and fuel costs can be lower. Thus, interest is in proven technologies that have been demonstrated. Private power in the form of Build, Own, and Operate (BOO) is a significant development as the Government of Indonesia recognizes the advantages of private power.

Existing, Ongoing and Committed Coal Fired Power Plants



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APPENDIX 4

BUSINESS - GOVERNMENT WORKING GROUPS

A. U.S. COAL TECHNOLOGY INDUSTRY CORE GROUP of the U.S. - ASEAN COUNCIL

BACKGROUND

To ensure private industry input in the development of U.S. market development initiatives in the ASEAN region, the U.S. - ASEAN Council organizes sector-specific "industry core groups" to serve as a business-business and business-government forum for information exchange. The U.S. Coal Technology Industry Core Group was organized by the U.S. - ASEAN Council in February, 1992 as a precursor to the *Coal Technology Mission* to Thailand and Indonesia. Twenty leading U.S. coal technology companies make up the industry core group. Meetings are planned on an as needed basis, based primarily on the concerns/requests made by the company members. There is no fee attached to membership.

OBJECTIVES

The objectives of the U.S. Coal Technology Industry Core Group include:

- a. Provide support for overall U.S. Clean Coal Technology (CCT) industry in: identifying specific opportunities in ASEAN and ensuring American market share.
- b. Educate core group members on the timely opportunities for clean coal technology market development opportunities in Thailand and Indonesia;
- c. Facilitate an understanding of market conditions and resources constraints;
- d. Incorporate valuable input from core group members into the design and implementation of the mission and follow-up actions;
- e. Develop a comprehensive, long-term strategy to maximize the mission objectives of developing increased technology transfer and business development mechanisms following the mission. Three particular issues were cited for further consideration:
 - (1) ways to effectively coordinate the various clean coal programs of various USG agencies and private groups;
 - (2) coordinating future clean coal initiatives in conjunction with the Coal Technology Export Subgroup of the Trade Promotion Coordinating Committee (TPCC);
 - (3) defining the appropriate role of clean coal technologies in the administration's new U.S. - Asian Environmental Partnership (U.S.-AEP).
- f. Facilitate and enhance public-private cooperation in expanding U.S. companies' role in Southeast Asian technology and equipment markets.

B. CLEAN COAL TECHNOLOGY EXPORT SUBGROUP

of the

**TRADE PROMOTION COORDINATING COMMITTEE
WORKING GROUP ON ENERGY, ENVIRONMENT AND INFRASTRUCTURE**

The Clean Coal Technology Export Subgroup (CCT Subgroup) has been established by the Chairman of the Trade Promotion Coordinating Committee (TPCC) Working Group on Energy, Environment and Infrastructure. The establishment of this permanent Subgroup, chaired by the U.S. Department of Energy, was the recommendation of the U.S. Government interagency report to the Congress "*Clean Coal Technologies*" of February 1992.

The objectives of the CCT Subgroup are to: (1) focus Federal export support on CCT's and ensure proper interagency cooperation; (2) determine what the U.S. CCT industry needs from the Federal Government and assure adequate interagency response; and (3) develop and implement a joint action plan.

Initial activities proposed for the CCT Subgroup include: (1) establishment of an on-going dialogue with industry; (2) development of a strategy and implementation plan in cooperation with industry; (3) interagency schedule coordination; and (4) information collection. The proposed strategy for the CCT Subgroup is to help the U.S. Coal Technology industry to compete effectively in the international marketplace through five major initiatives:

- Market information
- "Door opening" programs
- Credible project development teams
- Feasibility studies/foreign demonstrations
- Financial support for projects.

Following are summaries of proposed activities and initiatives for the CCT Subgroup. The initial organizational meeting for the Subgroup will be held in early June.

COORDINATED FEDERAL EXPORT ASSISTANCE IS NEEDED.

Types of Assistance

Agency/ Organization	Trade Missions	Loans	Insurance	Guarant.	Exporter Information	Trade Policy Development	Technology Demonst/ Assistance	Feasibility Studies
Agency for International Development		X			●		●	○
Dept. of Commerce/Int'l. Trade Admn.	X				X		X	
Department of Energy	●				●	X	X	●
Department of State					X	X		
Environmental Protection Agency	○				○		X	
Export-Import Bank		X	X	X				
Foreign Credit Insurance Association			X					
Private Export Funding Corporation		X						
International Trade Commission						X		
Overseas Private Investment Corp.	X	X	X	X	X			
Small Business Administration	X	X		X	X			
U.S. Trade and Development Program					X			X
U.S. Trade Representative						X		

KEY:

- X - Broad export assistance program
- - Environmental export program that includes CCTs
- - International CCT program

DRAFT STRATEGIC PLAN INITIATIVES

Best Available Document

Plan Initiative	Goals	Activities
Market Information	<ul style="list-style-type: none"> • Focus and increase effectiveness of current programs. • Establish information bases needed by exporters and their customers. 	<ul style="list-style-type: none"> • Mobilize U.S. Foreign & Commercial Service (US&FCS) and embassies to monitor opportunities worldwide and maintain ongoing information base. • Monitor activities of foreign competitors on an ongoing basis. • Develop and maintain publications, newsletters, databases, and other information sources for use by exporters and customers. • Coordinate information collection and dissemination with other agencies through the TICCC.
"Door Opening" Programs	<ul style="list-style-type: none"> • Assist and enable U.S. firms to bring their technologies to the attention of foreign customers • Increase awareness of export opportunities. 	<ul style="list-style-type: none"> • Aggressively utilize U.S. embassies and the US&FCS. • Support trade missions, reverse trade missions, conferences, workshops, and meetings. • Expand technology training/exchange programs. • Focus R&D cooperation to support successful U.S. projects and export trade abroad.
Project Development Teams	<ul style="list-style-type: none"> • Gain acceptance by foreign customers for U.S. coal and technology projects. • Convince U.S. electric utilities to serve as "quarterback" for project development teams 	<ul style="list-style-type: none"> • Encourage turn-key operating systems in project proposals. • Encourage programs to facilitate equity ownership by U.S. partners. • Provide training at operating U.S. facilities and on-site.
Feasibility Studies/ Foreign Demonstrations	<ul style="list-style-type: none"> • Provide gov't. assistance/support for project development in higher risk areas through cost-shared feasibility studies and CCT demonstrations. • Sensitize U.S. Government CCT RD&D to export considerations. • Develop foreign CCT demonstrations. 	<ul style="list-style-type: none"> • Maintain and promote FIETOP. • Encourage other gov't. agencies to support cost-shared feasibility study programs. • Demonstrate assurance of acceptable project performance through feasibility studies. • Encourage CCT demonstrations in major markets to use as a showcase and focus for promotion activities.
Financial Support for Projects	<ul style="list-style-type: none"> • Overcome barriers posed by U.S. competitors. • Augment USG trade finance programs to reflect realities of CCT projects. • Develop alternatives to grant assistance programs which recognize constraints, assure financial viability, and eliminate financial risks. 	<ul style="list-style-type: none"> • Continue USG support for cost-shared feasibility studies. • Encourage decisions based on life-cycle costs/credit for environmental improvements. • Develop specialized loan programs, performance warrantee programs. • Provide support for education/training.

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PROPOSED RESPONSIBILITIES FOR IMPLEMENTATION PLAN

Initiatives	Purpose	Lead Agency	Main Supporting Agencies
Market Information	Gather info., coordinate activities, monitor foreign markets and competitors	DOE	State, DOC/ITA, EPA
"Door Opening" Programs	Communicate to both potential exporters and customers	DOC/ITA TPCC	SBA, TDP
Project Development Teams	Ongoing market research	DOE	DOC/ITA, AID EPA
Feasibility Studies/ Foreign Demos.	Ensure U.S. technologies are adapted to foreign markets	DOE	AID, EPA TDP
Financial Support	Develop one-stop shopping financial assistance plan	Ex-Im Bank	AID, OPIC, Trade Rep, SBA

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APPENDIX 5

ORIGINS OF THE COAL TECHNOLOGY MISSION

An understanding of the origins of the trade mission and the business-government context within which it was organized will assist in implementing follow-up actions toward achieving short-term and long-term business opportunities for American firms. The organization and execution of the mission will serve as a model for future export-related activities. It is hoped that coordinated follow-up to the conclusions and actions contained in this report will result in not only market opportunities for U.S. technology companies but also result in new, improved USG energy export promotion activities in the Pacific Rim.

Initial planning for the mission began as a spin-off from DOE's Clean Coal Demonstration Program. In June 1990, the Deputy Secretary of Energy during his visit to Bangkok informed the Thai Minister of Science, Technology, and Energy of DOE's intention to sponsor a coal technology trade mission. Similar discussions were subsequently held with Indonesian officials which confirmed Asian interest for such a mission.

Following the release of the National Energy Strategy by the Secretary of Energy which encouraged the promotion of clean coal technologies in overseas markets, organization of this trade mission gained momentum under the auspices of the U.S. Trade Promotion Coordinating Committee (TPCC), an inter-agency body consisting of 19 U.S. government agencies which is chaired by DOC. In conjunction with the TPCC's efforts, the U.S. - ASEAN Council held two preliminary meetings of its Coal Technology Industry Core Group to incorporate industry-specific input in the organization of the seminar briefing which followed and, most importantly, the organization of the mission schedule. A seminar was held on April 21, 1992 (in Washington, D.C.) for twenty-five U.S. coal technology companies (targeted as mission participants) to highlight the numerous market opportunities available in Thailand and Indonesia and recruit company mission participants. In addition, the Council held a pre-mission briefing for mission participants with the U.S. Technical Advisor to the Ministry of Mines & Energy in Indonesia. Final planning was carried out by the U.S. - ASEAN Council and the TPCC's Clean Coal Technology (CCT) Export Subgroup, which is chaired by DOE. Appendix 4 provides further details on these two committees.

The trade mission was a timely follow-up to the March 1992 U.S. Ambassadors Tour of seven cities in the United States, which was designed to sustain the momentum of the U.S. private sector interest in pursuing commercial projects and partnerships in ASEAN. In-country organization of the trade mission was handled through a cooperative effort by U.S. and Foreign Commercial Service and the Private Investment and Trade Opportunities (PITO) project, a program funded by the ASEAN Regional Office of AID. In sum, the trade mission's success stemmed from the unique fashion in which a relatively large number of U.S. agencies combined forces in a cooperative effort with the private sector in pursuit of the common goal of promoting the export of advanced American coal technologies. However, the success of this mission will ultimately be judged by the number of commercial sales the participating companies and other U.S. firms are able to consummate over the near term.