

PD-ABL-193

**Mid-Term Assessment  
Final Report**

*United States - Asia  
Environmental Partnership*

*May 1995*

***Submitted to:***

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Subject: Contract No. PDC-0085-Q-00-1142-0, DO #15

To whom this concerns,

Please find enclosed two copies of the "Mid-Term Assessment Final Report: United States-Asia Environmental Partnership", USAID Contract No. PDC-0085-Q-00-1142-0, DO #15.

Should our assistance be needed in the future, we would be happy to provide our services.

Sincerely,

A handwritten signature in black ink, appearing to read "Adrian Fredrick", with a long horizontal flourish extending to the right.

Adrian Fredrick  
Database Manager  
M.S.I.

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## Acronyms

ADB	Asian Development Bank
AIT	American Institute in Taiwan
ANE	USAID's Asia and Near East Bureau
AXCAP	Access to Export Capital Program, managed by BAFT
BAFT	Banker's Association for Foreign Trade
BCN	Biodiversity Conservation Network (one of US-AEP's four components)
BOT	Build, Own and Transfer
BSP	Biodiversity Support Program
CTIS	USAID's Center for Trade and Investment Services
EBE	Environmental Business Exchanges
EEDI	Environmental Enterprises Development Initiative
EEI	Environmental and Energy Infrastructure
EGAT	Electricity Generation Authority of Thailand
EPA	U.S. Environmental Protection Agency
ETNA	Environmental Technology Network For Asia
FCS	Department of Commerce's Foreign and Commercial Service
IFAS	Infrastructure Finance Advisory Service
MSI	Management Systems International
NASDA	National Association of State Development Agencies
NGO	Non-Governmental Organization
OPIC	Overseas Private Investment Corporation
OPF	Overseas Program Fund
PITO	Private Investment & Trade Opportunities (a USAID project)
POD	Professional and Organizational Development
PRISM	Program Information for Strategic Management
PSC	Personal Services Contractor
PVO	Private Voluntary Organization
RHUDO	USAID's Regional Housing and Urban Development Office
SCO	Senior Commercial Officer
TAF	The Asia Foundation
TDA	U.S. Trade Development Agency
Tech Coop	Technology Cooperation
TNC	The Nature Conservancy
TPCC	U.S. Trade Promotion Coordinating Council
TQM	Total Quality Management
TR&D	Tropical Research and Development
UNCED	United Nations Conference on the Environment and Development
US&FCS	U.S. Foreign and Commercial Service (U.S. Dept. of Commerce)
USAID	United States Agency for International Development

<b>US-AEP</b>	<b>United States-Asia Environmental Partnership</b>
<b>USDOC</b>	<b>United States Department of Commerce</b>
<b>USDOE</b>	<b>United States Department of Energy</b>
<b>USEPA</b>	<b>United States Environmental Protection Agency</b>
<b>USETI</b>	<b>United States Environmental Training Institute</b>
<b>USG</b>	<b>United States Government</b>
<b>USIS</b>	<b>United States Information Service</b>
<b>WEC</b>	<b>World Environment Center</b>
<b>WRI</b>	<b>World Resource Institute</b>

## EXECUTIVE SUMMARY

The U.S.-Asia Environmental Partnership (US-AEP), initiated in January 1992, is one of the largest projects in USAID's Asia portfolio; the Agency's contribution to the program's first seven years of operation is expected to reach \$100 million. US-AEP's primary goal is to foster solutions to Asia's environmental problems using U.S. experience, technology, and practice. The program has sponsored activities in thirty-four countries in Asia and the Pacific, but approximately 90 percent of its activities have taken place in Hong Kong, India, Indonesia, South Korea, Malaysia, the Philippines, Singapore, Sri Lanka, Taiwan, and Thailand.

US-AEP is distinct from USAID's traditional development programs in that it did not identify site-specific objectives against which resources could be programmed. Instead, US-AEP concentrated on brokering linkages between U.S. businesses, government agencies and non-governmental organizations to support the transfer of U.S. environmental technology and management skills to Asia. US-AEP, as a way of doing business, insists that program implementors and participants contribute significantly to an activity's cost. In addition, US-AEP will only approve an activity if there is a reasonable prospect that the benefits in Asia will continue beyond the terms of USAID's support.

Although US-AEP serves multiple clients -- including USAID bilateral missions, Asian governments, and the U.S. private sector -- the program has often been perceived as being primarily a technology transfer program, albeit one that operates within the environmental sector. This is not surprising given that a majority of US-AEP's implementors have as their primary constituents the U.S. private sector, and that the program's most prominent presence in Asia is through the Technology Representatives, whose principal mandate is to support U.S. to Asia environmental technology transfer. The Technology Representatives, resident in nine countries, are managed through the Department of Commerce's U.S. and Foreign Commercial Service (US&FCS).

In addition to promoting U.S. to Asia technology linkages, US-AEP has also sponsored a variety of activities to increase Asia's capacity to develop environmental policies, identify options to solve site-specific environmental problems, and enable Asian institutions to gain knowledge about a wide range of U.S. environmental technologies and management practices. To a large extent, these development assistance activities have been carried out through USAID bilateral environmental projects and initiatives -- and have been programmed so as to maintain USAEP's emphases on cost-sharing and benefit sustainability.

Program activities to date have focused on four technical components:

1. **Professional and Organizational Development** - to strengthen environmental human resource and institutional capacity in the public and private sectors.

2. **The Biodiversity Conservation Network (BCN)** - to test site-specific biodiversity conservation projects through the use of enterprise-oriented, community-based approaches.
3. **Technology Cooperation** - to provide environmental technology transfer linkages between U.S. environmental firms and the Asian marketplace.
4. **Environment and Energy Infrastructure** - to support environmental and energy-efficient infrastructure investments in Asia, for the reduction of pollution and conservation of natural resources. At the time this assessment was conducted, this component was relatively new as compared to the other components.

As of October 1994, US-AEP had completed nearly 1,000 discrete activities. Most of these activities -- 81 percent -- were conducted under the Professional and Organizational Development component (training, fellowships, and business exchanges). The majority of remaining activities were funded through the programs of the National Association of State Development Agencies and the Biodiversity Conservation Network. US-AEP's four technical components are its programmatic themes and have been treated as categories for grouping activities rather than as development objectives.

As of the end of 1994, US-AEP had committed approximately \$70 million to activity implementation. Among the project's four components, BCN has received the most funding (\$20 million), followed by Professional and Organizational Development component (\$11.1 million) and the Technology Cooperation component (\$10.8 million).

#### **Principal Accomplishments from US-AEP's First Three Years of Operation**

- US-AEP has been highly successful in getting an impressive array of activities underway in a relatively short period of time. US-AEP is a present and growing concern and is becoming a well-known entity in Asia. Over its first three years of operation, US-AEP has focussed on the design, start-up and operation of new activities. The program currently coordinates, oversees, or directs implementation activities with some sixteen public and private organizations. Recently, the US-AEP Secretariat introduced several management adjustments which have increased the program's programmatic and cost effectiveness.
- US-AEP has led to increased U.S. private sector involvement in Asia. To date, US-AEP's largest economic impacts have been measured through the NASDA Technology Fund program. The program's U.S. private sector clients are highly satisfied with the Technology Fund program and, as of September 1994, the program had recorded over \$300 million dollars in U.S. environmental technology sales to Asia. And, as of October 1994, it was reported that the ETNA Trade Lead system had resulted in nearly \$9 million in U.S. environmental technology sales to Asia.

- The wide variety of US-AEP services has permitted the program to be a useful adjunct to all of USAID's bilateral environmental strategies in Asia. US-AEP enables USAID missions and Asian governments to have access to world-class environmental expertise and institutions. These institutions include the U.S. Environmental Protection Agency and many of the United States' most well-regarded private sector environmental technology companies (through the training programs sponsored by the United States Environmental Training Institute and other program implementors).
- US-AEP's implementors run well-managed and effective activities. Without exception, each of US-AEP's principal implementing organizations -- the Asia Foundation, the World Environment Center, the U.S. Environmental Training Institute, the National Association of State Development Agencies, the U.S. Environmental Protection Agency and DOC/US&FCS -- has received high marks for its performance from Asian participants and counterparts. The US-AEP Technology Representatives were seen in almost every case as being knowledgeable, personable, and ready and able to meet the needs of Asian businesses.

In addition to assessing project accomplishments to date, the mid-term assessment examined US-AEP from the following three perspectives:

- the *strategic* - US-AEP's programmatic framework and objectives;
- the *structural* - US-AEP's major institutional relationships and overall governance; and
- the *operational* - the effectiveness of the numerous implementation activities designed and managed by the US-AEP Secretariat.

The assessment team's principal conclusions are as follows:

#### **US-AEP's Strategy**

- US-AEP is sufficiently novel within USAID so as to be incongruent with key elements of USAID procedure. Most notable is USAID's programming emphasis on clear ex-ante objectives and performance indicators, which are expressed in terms of their intended development impact in recipient countries. US-AEP has not programmed site-specific environmental objectives and this has caused some tension between US-AEP and USAID's Asia/Near East Bureau, and left the program vulnerable to perceptions that it lacks a sufficiently focused strategy.
- There is a widespread view, shared by the evaluation team, that US-AEP's image and impact would benefit from additional clarity in its goals, objectives and strategy. While almost certainly requiring some narrowing of the program's scope, effort should

be made to do so in ways that do not unduly limit the program's current operational flexibility and entrepreneurial character.

Of activities undertaken to date, those associated with Biodiversity Conservation Network component are the most difficult to reconcile with US-AEP's overall strategy and the most difficult to integrate with US-AEP's other activities. The BCN component, unlike other US-AEP activities, does not support U.S. to Asia linkages that are likely to be sustained through the forces of Asia's environmental marketplace.

### **US-AEP's Structure: Relationship to USAID and the U.S. Government**

A basic structural issue facing US-AEP is its relationship to USAID and to its other U.S. government collaborators, particularly in regard to the program's governance. In the view of the assessment team, the Partnership is at a cross-roads regarding whether or not it should be managed as a USAID project, or whether an effort should be made to revitalize an interagency governance committee.

USAID could continue to assert a relatively dominant role in the project's governance, in which case US-AEP could more obviously cast itself as a USAID program that oversees other U.S. government agencies serving as intermediaries (rather than as management partners). This option corresponds roughly to the status quo and would presumably oblige US-AEP to define its strategy to fit more closely within the boundaries of USAID's sustainable development objectives, and to be more closely aligned with USAID regional and global strategies. This option would appear to imply pursuing a fixed-duration plan for US-AEP to work itself out of a job by inducing a sufficient range of other USG, state and private entities into the Asian environmental marketplace so as to eliminate the rationale for the type of intermediation provided by the program.

A second option would be to resuscitate the inter-agency governance structure that originally characterized the effort. To select this option would presumably have as one implication the projection of US-AEP as a U.S. government initiative that would address a range of objectives somewhat broader than USAID's mandate. To some extent, the limited role to date of U.S. government institutions (other than USAID) in the program's governance has been due to the virtual demise of the old Trade Promotion Coordinating Committee's US-AEP Working Group.

### **US-AEP's Structure: Partnerships**

Central to US-AEP's way of doing business has been its focus on developing partnerships. US-AEP uses a "partnering" concept as a basis for approving and managing its activities. Roughly speaking, partnership implies that US-AEP works with U.S. businesses, government agencies, and NGOs that are willing to contribute resources to the effort and are likely, out of

self interest, to enter into relationships in Asia that will extend beyond the terms of support offered by USAID.

The program's strongest "partnering" accomplishment to date has been its ability to broker new institutional linkages between U.S. and Asian entities, and particularly between the U.S. and Asian private sectors. The volume of environmental technology transfer that has resulted from US-AEP activities attests to the success of this effort.

### **US-AEP's Operations**

The programs of US-AEP's implementors have been its strength -- activities have been well-managed and effective. In addition, the US-AEP Secretariat has done an exemplary job of analyzing and improving program management operations in the period since the program's commencement.

In order to further build upon the program's success to date, the assessment team identified several opportunities for increasing the synergy between individual project components in Asia. In countries where there is both a USAID mission and a Technology Representative office, US-AEP's dual priorities of environmental technology transfer and building environmental management capacity within Asia are both active, but have generally not been well coordinated. Building increased synergy between US-AEP's overseas activities is an area upon which attention can be directed to further the program's evolution and maturity.

### **Structure of This Report**

This assessment report is structured as follows:

Chapter 1 - Overview; reviews the project's context, structure, governance, objectives and overall strategy.

Chapter 2 - Assessment of US-AEP Components; discusses the program's four technical components and provides an analysis of the activities carried out under each.

Chapter 3 - Analysis from Country Visits; summaries of conclusions from the assessment team's field research in ten countries.

Chapter 4 - Overall Conclusions and Recommendations; provides a summary of conclusions from previous sections and introduces corresponding recommendations. Conclusions and recommendations are presented according to strategy, structure, and operations.

Annexes include: US-AEP's draft objective tree and performance indicators, highlights from country visits, the assessment team's methodology, and a list of persons contacted.

US-AEP raises a number of critical issues with respect to USAID policies, procedures and mechanisms for future programming in the environmental arena, in Asia, and in advanced developing countries. These issues, however, were considered to be beyond the scope of this assessment and therefore are not directly commented on in this report. In addition to this assessment exercise, a corollary Asia environmental issues/strategy paper is being produced by Winrock International.

## Chapter 1 Overview

The United States-Asia Environmental Partnership (US-AEP), begun in early 1992, is one of the larger projects (really a program) in USAID's Asia portfolio; the Agency's contribution to the program is expected to reach \$100 million over its first seven years of operation. To date, US-AEP has already completed nearly 1,000 discrete actions.

In addition to assessing project accomplishments to date, the mid-term assessment examined US-AEP from the following three perspectives: the *strategic* - comprising US-AEP's programmatic framework and overall goals and objectives; the *structural* - US-AEP's major institutional relationships and overall governance; and the *operational* - the effectiveness of the numerous implementation activities designed and managed by the US-AEP Secretariat.

### A. Development Context

#### International Setting

Economic and population pressures continue to threaten the global environment. In principle, these pressures could be checked by slowing rates of economic growth and population increase alone. But this is unlikely. Demographic momentum points towards a doubling of the world's population in just the next fifty years, and economic growth is an aspiration which is not to be denied. Curiously, the analysis drives back to the problem itself--technology--and the absolute imperative to reduce environmental impact per unit of growth. Without a dramatic increase in the resource efficiency of production, and without similar progress with pollution prevention, pressures on world resources will continue to grow.

Technologies which reduce environmental risk while at the same time improving economic productivity exist. Indeed, technologies limiting industrial pollution and improving energy efficiency are already widely available in the environmental market in the United States. Of course, much more needs to be done to capitalize on this potential. Beneficial technologies and current best practice must be diffused more rapidly, and on a global scale. Environmentally superior products and processes must be brought to market more quickly, also on a global scale. And, the new technologies, to increase efficiency and prevent pollution, must be promoted more aggressively, both in the United States and through world technology systems.

Interestingly, technology also holds the key to the revitalization of the American economy. It has everything to do with both the quantity and quality of new job creation. Technology also holds the key to international competitiveness. Technology exports are the most favorable aspect of American trade balances; global markets for high technology products are growing faster than markets for other products; technology manufacturers export three times more of their production than other manufacturers; and international alliance among science

establishments and independent laboratories, private sector technology companies, and financial institutions offer American companies a wider world of creative ideas, finance, production facilities, marketing resources, and sales.

In this regard, President Clinton recently observed: "The truth of our age is this, and must be this: Open and competitive commerce will enrich us as a nation. It spurs us to innovate. It forces us to compete. It connects us with new customers. It promotes global growth without which no rich country can hope to grow wealthier. American jobs and prosperity are reasons enough for us to be working at mastering the essentials of the global economy, but far more is at stake. For this new fabric of commerce will also shape global prosperity or the lack of it, and with it, the prospects of...people around the world."

### **Regional Setting**

The economic phenomenon in Asia is strikingly different from the development experience of the 1950s and 1960s. First, there is an accelerating trend in the pace of technical change. There is also increasing interdependence and competition in international markets. Second, there is a new appreciation of comparative advantage, no longer thought of in terms of natural endowments but rather in terms of human creative power, highly educated workforces, organizational talent, and the ability to adapt. Third, there is a spreading intellectual and ideological commitment to the market. Fourth, there is now a relatively mature physical and institutional infrastructure. And fifth, there is a growing and increasingly important cadre of professional, managerial, and technical people at work in a more decentralized decision making environment.

Equally significant, Asia is already the largest export market for the United States. Exports to Japan exceed those to Britain and Germany combined, more to Korea than to France, more to Singapore than to Brazil, Italy or Spain, more to Malaysia than to the former Soviet Union, more to Thailand than to the rest of Eastern Europe combined. In 1980, the ratio of imports to GNP was nearly twice as high in the developing countries of Asia as in the world economy as a whole. Merchandise imports by these countries grew at almost 8% annually during the 1980s, nearly double the growth rate of world imports. Finally, the Asia/Pacific region has become the United States' largest trading partner, conducting more than \$300 billion in trade annually. This situation suggests new avenues for development cooperation between the United States and Asia. Indeed, trade has long replaced development assistance as the important medium of economic cooperation. The marketplace today (broadly defined to include trade, investment and technology cooperation) is probably the most important, if not the only, medium to harness investment and technologies from the United States to development in Asia and for influencing development outcomes.

Yet development in countries like Indonesia, Malaysia, even Thailand is not fully secure. Each of the countries face environmental threats to their natural resource endowments, industrial infrastructure, burgeoning urban concentrations, and health security. A complicated set of development issues, even if up a notch in sophistication from an earlier agenda, remain

to be addressed. It is the premise of the Partnership that American intellectual creativity, leadership, technical expertise, technology, nongovernmental engagement, private investment, and enlightened trade can be a continuing and distinctive engine for addressing these challenges - to mutual advantage.

### **Environment, Development and the Role of Technology**

The idea of sustainable development suggests a new role for technology in the development process. Countries at all stages of development recognize that current patterns of resource use cannot be maintained. This is clear both in the United States and in Asia where the limits of existing transportation, manufacturing, energy systems, and pollution control technologies are being approached. This realization creates an imperative for action in which technology must play the critical part in expanding the possibilities for human development. Technological transformation must not only spur radical innovation - new products, processes, techniques, and systems - but also accelerate the diffusion of the best technology currently available to enterprise, industry, and countries that lag behind the state-of-the-art.

All countries share a common interest in addressing global environmental threats: ozone depletion, climate change, acid disposition, the inefficient use of energy, and shrinking biodiversity cannot be overcome without concerted international action and cooperation. Even where the immediate impacts are local, the globalization of manufacturing, technology, and capital makes environmental degradation a transnational issue. In this circumstance, there is an important role for globalizing enterprises as well as for government and international development agencies.

The interplay of poverty and the environment is also important. The poor are both victims and agents of environmental damage. About half of the world's poor live in rural areas that are environmentally fragile, and they rely on natural resources over which they have little control. Land-hungry farmers resort to cultivating unsuitable areas - steeply sloped, erosion-prone hillsides; and tropical forests where crop yields on cleared fields frequently drop sharply after just a few years. Poor people in crowded squatter settlements frequently have no access to safe water and sanitation, and suffer from flooding and landslides, industrial accidents and emissions, and transport-related air pollution. The poor are often exposed to the greatest environmental health risks, and they tend to be the most vulnerable to those risks because of their poverty.

**Agenda 21**, the action plan resulting from UNCED in Rio, emphasizes the role of technology for environmental improvement. Though essential, articulation of the goal has done little to overcome the enormous real and perceived barriers to the development and deployment of such technology internationally. Given the growing urgency of environmental problems, particularly in Asia where they are increasing in direct proportion to economic growth, and the skewed international distribution of technical and financial resources, institutions in the United States - private and public - must take the responsibility for making environmental superior technologies available globally and must collaborate with the developing countries to

encourage, adapt, develop, deploy, and use it. The need for new modes of action is equally pressing.

Technology cooperation is the obvious alternative to technology transfer, as development cooperation is the alternative to development assistance. Together, the concepts imply mutually beneficial undertakings by institutions from different countries and development regimes to encourage, adapt, develop, deploy, and use technology. It implies active partnership. Despite ample capability to mobilize environmentally superior technologies, the attempt to build international partnerships is making only slow progress. Technology and development cooperation will require new forms of interaction among governments, private enterprises, multilateral institutions, and nongovernmental organizations. It is a premise of the Partnership, of course, that the size, shape, texture, reach, and potential for strategic partnership between the United States and Asia can, in fact, be affected - to mutual advantage.

### **United States-Asia Environmental Partnership**

The goal of the United States-Asia Environmental Partnership is to encourage the advancement of environmental quality and sustainable development in Asia and the Pacific. The Partnership is intended to assist Asian countries to restore, protect, and preserve their fragile and rapidly deteriorating environmental systems through the mobilization of United States expertise, technology, and financial resources. Further, the Partnership is intended to improve environmental technology cooperation by pragmatically bringing together the resources and mandates of the United States government at the federal, state, and local levels, with American businesses, and concerned nongovernmental organizations, including private not-for-profit entities, universities, think tanks, and laboratories.

Underlying these goal and purpose statements are the following assumptions:

- Asia's ecological degradation is widespread and growing.
- A healthy environment is required to support a strong economy and a strong economy is needed to sustain a healthy environment.
- Concessional and other public resources alone will be largely inadequate over the next decade to meet funding requirements for environmental projects in Asia. Therefore, US-AEP sponsored and/or supported activities, programs, and initiatives will focus on facilitating environmental technology cooperation through the marketplace, and through the broad scale engagement of private capital and local initiative.
- The United States government, in collaboration with Asian partners, can effectively coordinate a wide range of existing and new public and private resources (U.S. and Asian) focused on environmental problems in Asia.

- United States technologies, goods, and services are relevant and competitive in most important environmental problem areas.
- By illuminating emerging market demand for new, scaled, or adapted environmental technologies, United States businesses and non-governmental organizations will respond with appropriate technologies.

Partnerships are central to US-AEP's way of doing business. This has resulted in an emphasis being placed on supporting activities that meet the following conditions: willingness of implementing organizations to significantly contribute to an activity's cost ("development cooperation" rather than development assistance); evidence that the benefits of the activity in Asia will continue beyond the terms of US-AEP financial support; and an emphasis on the transfer of U.S. environmental technology, practice or experience to Asia.

### **B. US-AEP's Strategy**

**What is US-AEP's strategy?** The strategic foundations of the Partnership lie in the development context as described above and as reflected in the following guiding principles:

- The key to successful operations in Asia is to establish long-lasting relationships built on participation, trust and mutual respect.
- Coordination of United States government programs directed toward environment, development, trade, export, and technology transfer focuses government resources more efficiently and effectively.
- The Partnership will build a series of activities under the following four components: Professional and Organizational Development, Technology Cooperation, Environmental and Energy Infrastructure, and Biodiversity Conservation. Activities under these components will be employed on a demand-driven basis. (US-AEP defines "activities" as the projects undertaken by individual project implementors, such as the World Environment Center.)
- Environmental problems in Asia are so enormous and widespread that open and flexible systems are needed to respond to opportunities and to be able to take advantage of market-based opportunities as they arise.
- The Partnership will design activities in accordance with their ability to leverage resources and influence market forces.

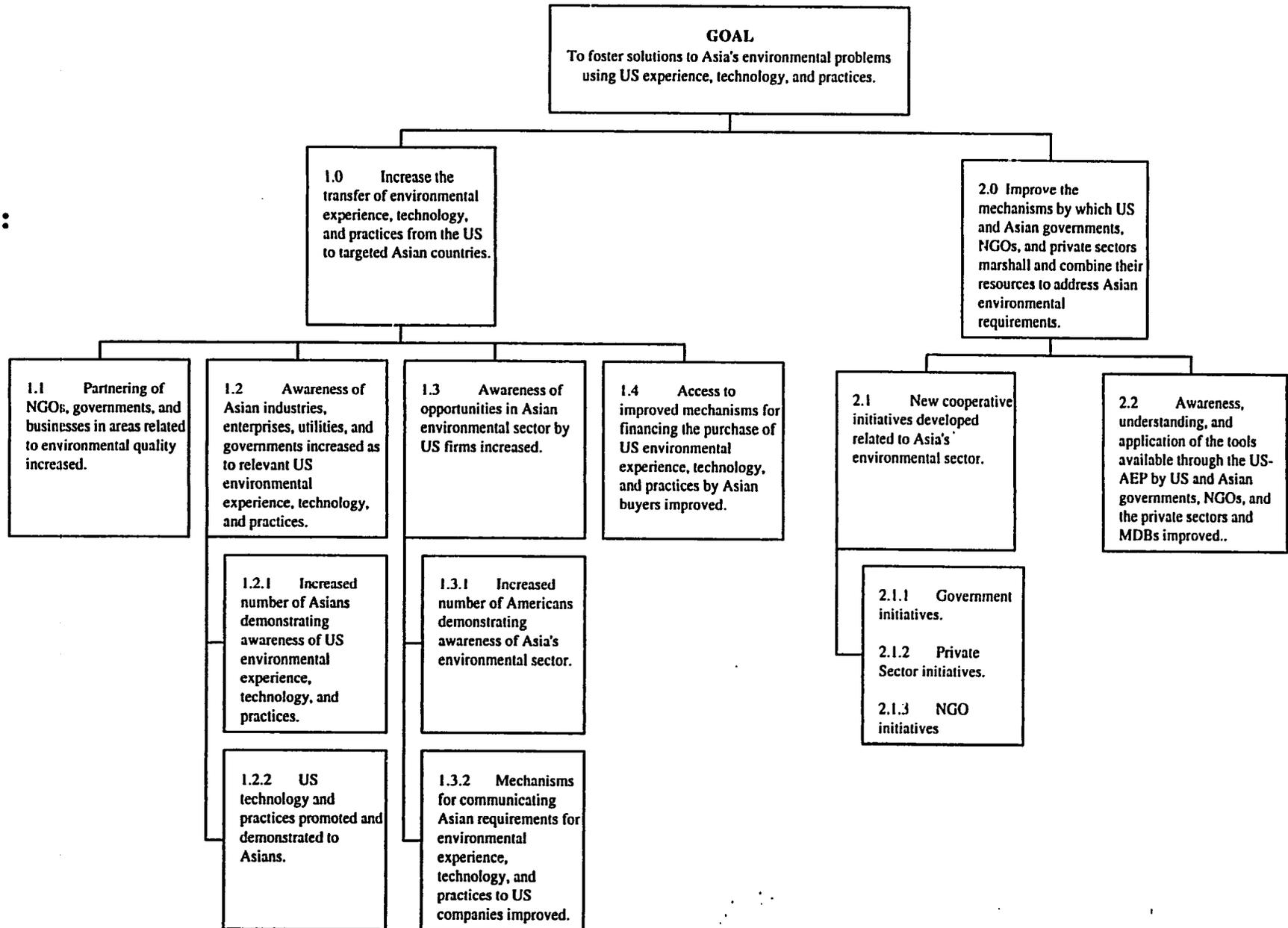
The Partnership's strategy for pursuing these fundamentals is elaborated in the original project paper and in a strategic framework, developed in late 1993 through a first-round PRISM exercise. A draft objective tree for the US-AEP is presented on the following page (see Figure 1-1), and the objective tree and its performance indicators are presented in Annex A.

# Objective Tree for US-AEP

**GOAL:**

**STRATEGIC OBJECTIVES:**

**PROGRAM OUTCOMES:**



The current evaluation suggests that additional refinement has taken place in US-AEP's implicit strategy since the time of the Phase I PRISM exercise.

Improving linkages between U.S. and Asian entities is central to US-AEP's strategy. Essentially, the Partnership is an effort to broaden the breadth, depth and impact of ongoing linkages between relevant U.S. institutions, public and private, and the key environmental problems facing Asian countries. In pursuit of this aspect of its strategy, US-AEP could perhaps be judged as being effective to the extent it fosters linkages that (a) would not otherwise have existed (additionality); (b) attract non-USAID resources (leverage); (c) result in the use of U.S. environmental experience, technology, and practice (technology transfer); and (d) continue or grow in the absence of direct USAID support (sustainability). Ultimately, of course, these results will only have been developmentally meaningful if they result in identifiable and positive effects on pressing environmental problems in Asia (impact).

The direct results of US-AEP's efforts to promote improved linkages can and should be reflected in improving the functioning of private markets by promoting improvements in three basic arenas -- information flows, policy/regulatory changes, and commercial transactions that promote greater use of environmentally appropriate technologies. Once again, the specification of these objectives is more implicit than explicit in the current strategy, but nevertheless appears to characterize the majority of the efforts undertaken to date.

Central to this strategy is a strong reliance on market mechanisms to generate and sustain demand for linkages between the United States and the relatively developed countries of Asia. The program is conceived as an interim measure to accelerate these actions and assist in the early introduction of U.S. environmental actors into the Asian marketplace. It appears to anticipate its own "sunset" at such time as these relationships are firmly established. In addition to the existence of an improved policy/regulatory framework, US-AEP's goals with regard to improving the functioning of the market for environmental improvement in Asia could plausibly be assessed in terms of four key indicators -- (1) overall growth in the market for environmentally-sound technologies, (2) investment in cleaner technologies, and (3) increased involvement by U.S. suppliers in Asia's environmental technology marketplace. These indicators are not at this time being tracked as medium-term performance measures for the program, but presumably could were they to be acknowledged as important goals.

At the highest level, US-AEP is an effort to address environmental problems of importance to Asia and interest to the United States, while simultaneously positioning U.S. public and private institutions to play an increased role in the Asian environmental marketplace. To date, the program's strong reliance on demand-driven identification of activities has resulted in a reluctance to identify in advance environmental problems, technologies or countries to be emphasized. Nevertheless, after two years, certain implicit areas of emphasis have begun to emerge. In particular, the US-AEP has been most directly involved in problems related to industrial pollution and biodiversity (the latter because of a specific US-AEP component dedicated to biodiversity activities). Were US-AEP and its sponsors to wish further program focus and additional clarity in the criteria for selecting sub-sectors of activity, the evaluation

team feels that the criteria most in the spirit of US-AEP's implicit strategy would be (1) the importance of the problem to sustainable development in Asia, (2) the importance of the problem to the United States and U.S. interests, (3) the suitability of the problem or issue to remediation through technology and market mechanisms, and (4) the comparative advantage of U.S. expertise and technology. With regard to the selection of countries, USAID has also instructed US-AEP to direct at least 80% of its resources to USAID-presence countries.

It has been observed globally that the time required for environmental impacts is typically considerably longer than the 5 to 8 years normally associated with USAID strategies. Typically, this has resulted in USAID missions adopting "changes in practices" as the level of impact appropriate for attention and accountability at the strategic objective level. In the case of USAEP, however, a unilateral focus on changes in Asian environmental practices would fail to reflect adequately the importance in the program's medium-term strategy of involving U.S. organizations in the Asian marketplace and improving the functioning of private markets.

Complicating US-AEP's efforts to be strategic is its essentially demand driven nature. As one might expect, during its initial years the Partnership faced considerable difficulty in forecasting the services most likely to be requested, the specific environmental problems on which it would expect to have an impact or even the countries most likely to be served. Moreover, during the US-AEP's early years, emphasis has been directed towards designing and implementing an adequate stream of good activities than on selecting among competing proposals. This has resulted in a portfolio of USAEP-funded activities that span across the Partnership's four components (Professional and Organizational Development, Technology Cooperation, Environmental and Energy Infrastructure, and Biodiversity Conservation) and includes a wide array of individual actions (e.g., medical waste training, urban air pollution technology transfer, EPA action teams to address specific environmental problems), and numerous countries. With two years of experience and increasing demand, however, it is now possible to describe retrospectively the actions undertaken and some of the results achieved and, to the extent they do not correspond to USAID expectations and preferences, to introduce additional proactivity or selectivity on the part of the program to better reflect the desired outcomes.

Finally, it should be noted that USAEP is a novel approach by USAID to managing development assistance, addressing environmental problems, and relating to other parts of the USG. As such, it raises a number of important policy issues regarding the most appropriate role for USAID in the region and the sector that go well beyond the scope of this assessment and have considerable implications beyond US-AEP.

**How well is US-AEP doing in its strategy?** First-round strategic frameworks generally are not thought to be "carved in stone," and this one should be considered an initial working document that may be subsequently revisited, perhaps especially as a follow-up to completion of this interim assessment.

US-AEP is sufficiently novel within USAID so as to be incongruent with several key elements of USAID procedure -- most notable is USAID's development planning emphasis on formulating clear ex-ante objectives and performance indicators which are expressed in terms of their development impact in recipient countries. In some ways, US-AEP operates more like a foundation or a "social venture capitalist" than like a traditional development agency. The acceptability and utility to USAID of this organizational experiment is necessarily beyond the scope of this exercise but of immediate interest as the program and the organization consider future directions and models.

At this relatively early stage, we offer the following comments to consider regarding the strategy:

- In their broad scope, the Partnership's strategic foundation and the objective tree's goal encompass a potentially unlimited number and variety of environmental problems.
- There is a widespread view, shared by the evaluation team, that US-AEP's image and effectiveness would benefit from additional clarity in its goals, objectives and strategy. While almost certainly requiring some narrowing of the program's scope, effort should be made to do so in ways that do not unduly limit the program's current operational flexibility and entrepreneurial character.
- The narrative content of strategic objectives and program outcomes need to be reviewed for their realism and their congruence with current and expected US-AEP activities. As currently written, USAEP's operational components constitute categories for grouping activities rather than objectives per se, and do not incorporate important aspects of the program's implicit strategy. The nature of the linkages to be fostered, the direct results to be sought, the market issues and environmental problems to be addressed, and countries of emphasis are all potential issues for discussion and choice. Moving further into the performance measurement phase (identifying indicators, baselines and targets) should also help to tighten the strategy.
- On a related matter, the Partnership should soon be able to cast anticipated results in light of accomplishments thus far. The 1992 Annual Report (p. 11) includes among anticipated leveraged results over 10 years the following: 20-50 infrastructure projects with clean technology; 40 environmental action teams; up to U.S. \$5-10 billion of U.S. environmental goods and services exported; and creation of 100,000-200,000 new U.S. jobs.

### **C. Implementation Structure**

What is US-AEP's structure? The organizational structure of the Partnership is presented in Figure 1-2 (on the following page). Major elements include: the Secretariat, USAID's management group; the Technical Support Services contractor, Tropical Research & Development (TR&D); a new Field Operations office in Manila; and over a dozen Implementing Organizations, including USG agencies, NGOs, and a Quality Assurance function.

**How well is US-AEP doing in its management structure?** A basic management issue facing US-AEP is its relationship to USAID and the U.S. Government. There has been a subtle series of changes in US-AEP's governance structure over the two years of its existence. During this period, the role of the inter-governmental coordinating structure for the project has declined along with the virtual demise of the TPCC/US-AEP Working Group. US-AEP has since come to operate more directly under the supervision of USAID. The Partnership has operating procedures akin to a foundation although its Director General is a full-time USAID employee.

In the view of the evaluation team and many of those interviewed, the Partnership is at a cross-roads with respect to this issue. Essentially, in the view of the evaluation team, there are three options. First, USAID could choose to assert a relatively dominant role in which case US-AEP would more obviously cast itself as a USAID program with other U.S. Government agencies serving as intermediaries rather than co-managers. This option corresponds roughly to the status quo and would presumably oblige US-AEP to define its objectives in the context of USAID sustainable development objectives and to be as fully integrated as possible into regional and global USAID strategies. Given the reluctance of USAID to enter into long-term commitments, this option would appear to imply a relatively short-lived (perhaps 10 years) plan for US-AEP to work itself out of a job by inducing a sufficient range of other USG, state and private entities into the Asian environmental marketplace to eliminate the rationale for the type of intermediation provided by US-AEP.

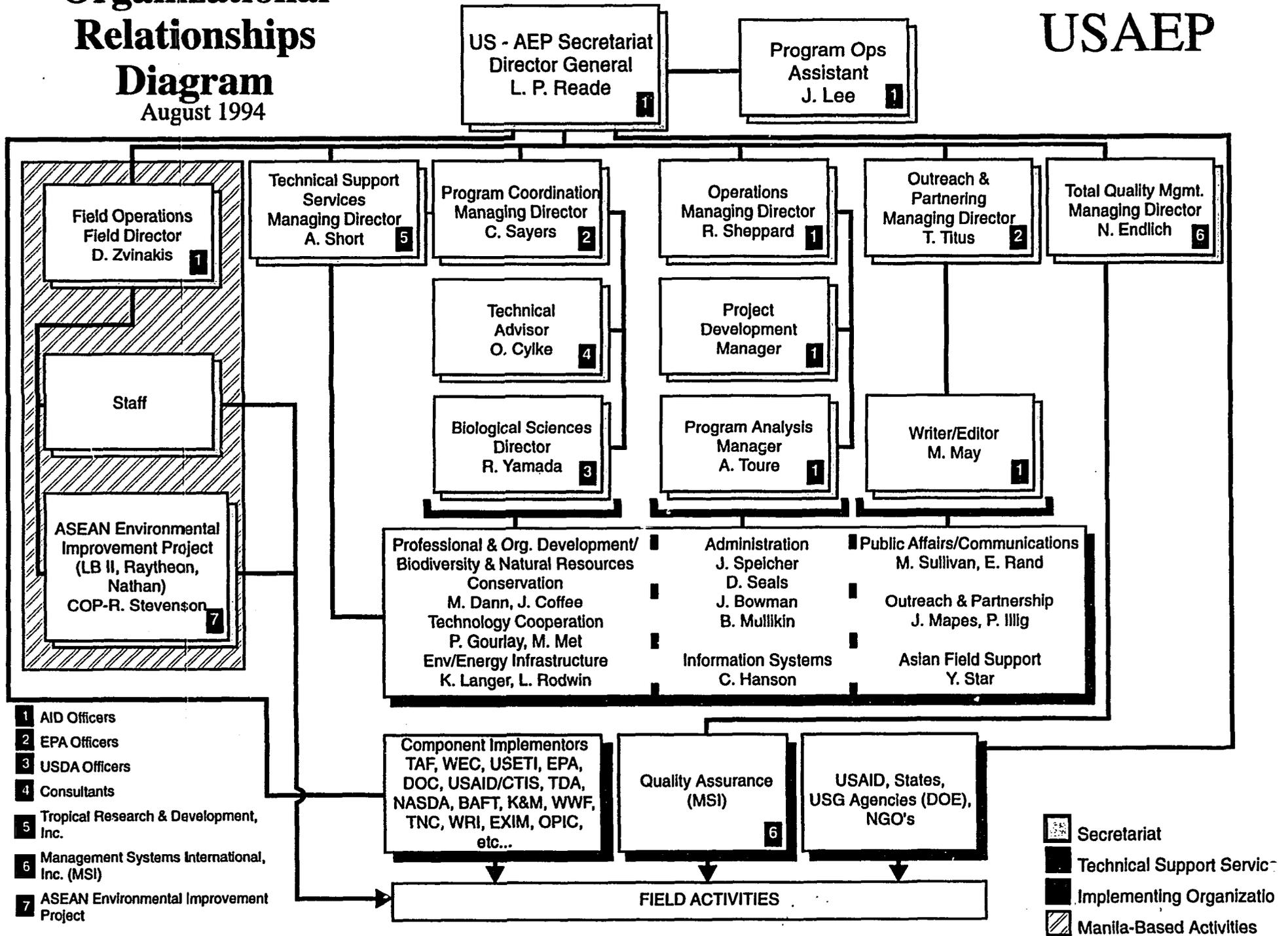
A second option would be to resuscitate the inter-governmental governance structure that originally characterized the effort. To select this option would presumably have as one implication the projection of US-AEP as a U.S. Government initiative addressing objectives and priorities (such as trade development) in addition to USAID's articulated sustainable development strategies.

The third option would be to treat and eventually constitute US-AEP as an independent organization or foundation sponsored and financially supported (perhaps on a declining basis) by USAID. There are precedents for this approach which would presumably permit the organization and its board to articulate their own objectives, funding criteria and performance measures as a basis for discussion with USAID and other potential funding sources. This option would appear to be most consistent with maximizing US-AEP independence and flexibility, but raises obvious questions of organizational sustainability.

# Organizational Relationships Diagram

August 1994

# USAEP



Directly related to the issue of governance is the concept of "partnership" embodied in the project. The project partnerships are one of its principle mechanisms for carrying out its strategy. US-AEP views partnerships at the following four levels:

1. Partnerships between US-AEP and other U.S. Government Agencies involved in the U.S. Trade Promotion Coordinating Committee (TPCC)/US-AEP Working Group. The TPCC working group is co-chaired by the Department of Commerce and USAID, including DOE, OPIC, U.S. TDA and the EX-IM Bank among others.
2. Partnerships between US-AEP and its Implementing Organizations. This group includes both governmental and non-governmental organizations, including USEPA, DOC/US&FCS, OPIC, TAF, WEC, USETI, and NASDA.
3. Partnerships between U.S. and Asian private sector firms, government institutions and NGOs to promote market-based environmental technology transfer. US-AEP considers this level of partnership to be the program's most important. US-AEP sponsors individual actions according to the likelihood of participants being able to develop linkages that will continue beyond the initial cost-shared actions supported by the program.
4. Partnerships between US-AEP and Asian organizations and institutions that are likely to be influential in affecting the region's environmental policies.

To date, the US-AEP has developed working linkages with an impressive diversity of partners, and it is much to the credit of project leadership and staff that these relationships have been developed.

Concern, however, is most often expressed about US-AEP's relationships with U.S. government institutions, in part because at times they have been accompanied by territorial or bureaucratic contentions. Overall, it was the view of the assessment team that the quality of these partnerships has varied considerably and that there is evidence that some of these relationships are improving. However, US-AEP could benefit from additional attention being given to finding ways to meaningfully include its U.S. government collaborators in the project's governance (if the program is to remain a USG inter-agency initiative). To a large extent, the limited role to date of U.S. Government institutions (other than USAID) in the program's governance has been due to the virtual demise of the TPCC/US-AEP Working Group.

The program's strongest "partnership" accomplishment to date has been its ability to broker new institutional linkages between U.S. and Asian entities, and particularly between U.S. and Asian businesses. The volume of technology transfer that has resulted from US-AEP activities attests to the success of this effort. The effort to form Asia-U.S. linkages is now coming into fruition and it may therefore be an appropriate time to revisit the issue of if and how to assess and monitor the formation of enduring and market-based partnerships.

US-AEP is now beginning to conceptualize activities to increase the involvement of Asian institutions in the formulation of the program's operations. In particular, the newly opened Manila office is expected to play a key role in increasing US-AEP's cooperation with Asian institutions. Nevertheless, several of US-AEP's Implementing Organizations have developed close professional relationships with counterpart organizations throughout Asia. For example, the Industrial Estate Authority of Thailand's Environmental Enhancement Center has approached USETI to see if the two organizations can collaborate in establishing a regional environmental training center in Bangkok.

It is a conclusion of this exercise that the concept and nature of the partnerships between US-AEP and the U.S. Government, project implementing organizations and Asian institutions should be the subject of additional discussion.

#### **D. Operational Issues**

US-AEP has completed over 934 actions (project actions are detailed in Section 2). Environmental and Energy Infrastructure, as well as Public Outreach, activities are not included. Most of the enumerated activities (757, or 81%) are Professional and Organizational Development activities. Other major items are NASDA Tech Fund grants and Biodiversity Conservation Network (BCN) grants.

Twenty-three countries are included as sites or sources for these activities. Among these countries, ten countries received the lion's share of US-AEP activities and resources. Thailand, Indonesia, and India had the largest numbers of activities through September 30, 1994; these three countries accounted for somewhat over 50 percent of all the activities listed in the table. Training from the U.S. Environmental Training Institute was the most common of all activities, with 298 participants (32% of all activities). Among the countries with Tech Reps, the range in number of activities is notable: while Thailand accounts for 199 (or 21% of the total), Hong Kong has only 18 (2%).

Another dimension of structure is financial expenditure, which is summarized in Table 1-2.

**Table 1-2. US-AEP Expenditures through 1993**

<b>Element</b>	<b>Actual Commitments in \$ millions (percent)</b>	<b>Planned Expenditures 1992-96 (percent)</b>
Professional and Organizational Development	11.1 (19%)	25.0
Environmental and Energy Infrastructure	5.4 (9)	10.0
Technology Cooperation	10.8 (19)	15.0
Biodiversity Conservation Network	20.0 (34)	25.0
Management/TQM	9.3 (16)	15.0
Transfers to USAID missions (and other partnering activities)	1.5 (3)	10.0

(Total US-AEP commitments to date: \$ 58.1 million, as documented in the US-AEP 1993 Annual Report.)

As may be seen from the table, BCN activities lead the components in projected expenditure, with Technology Cooperation and Professional and Organizational Development following. It should be noted, however, that these figures relate to commitments to date and do not include additional resources leveraged or catalyzed by the program.

**What is US-AEP doing in its operations?** In certain important respects, US-AEP operates like a regional USAID Mission focused exclusively on a single thematic area -- the environment. Although its specific objectives and interventions are country-specific, its operating systems and contracting mechanisms are sufficiently consistent across countries to permit considerable economies of scale.

US-AEP does its direct service delivery through Implementing Organizations, cooperating USAID missions, and the Technology Representatives (who are under the supervision of the Department of Commerce's U.S. and Foreign Commercial Service). Managing and

monitoring this array of implementing organizations is a particular challenge for US-AEP and is discussed in some detail later in this document.

**How well is US-AEP doing in its operations?** Overall, the assessment team concluded that:

- US-AEP is a present and growing concern and is becoming a well-known entity in Asia. The Partnership has an active field presence in nine countries and cooperates with or manages activities with 25 U.S. governmental and non-governmental organizations concerned with environmental issues in Asia.
- On the operational level, program management has displayed an openness to innovation and new programmatic ideas that pushes the project forward into new areas of environmental management. And, on a continual basis, US-AEP management has given attention to analyzing and improving program operations.
- The magnitude, complexity and dispersion of US-AEP's portfolio -- and its inability to project ex-ante objectives and targets -- have complicated US-AEP's relations with USAID and impeded its ability to aggregate its accomplishments above the activity level.
- Due perhaps to the administrative and management challenges attached to forming organizational partnerships, program operations may have thus far been focused on the development of structural relationships and initiating activities, with relatively less attention thus far having been given to setting-up performance information systems.

## **Chapter 2**

### **Assessment of US-AEP Components**

US-AEP features four components: Professional and Organizational Development, Biodiversity Conservation Network, Technology Cooperation, and Environment and Energy Infrastructure. Other components were under development during our assessment and will not be addressed here. The four components are the programmatic pillars of US-AEP, initially identified as action themes from the Secretariat, managed in US-AEP/Washington, and expressed through the activities of implementing organizations in the U.S. and in Asia.

This section briefly reviews the activities of the components, and presents findings and conclusions for each. As noted in the Project Paper (Substitute), activities and impacts of the respective components are not strictly divisible, particularly in the field. Nevertheless, for program improvement purposes the assessment team expects that a component-by-component analysis should be useful.

This section does not attempt to comment on the synergy between components in US-AEP countries but limits discussion to the management and usage of individual components. A discussion of the inter-play between components is discussed in the subsequent section which presents highlights of country summaries.

Table 2-1 illustrates the level of usage of the of US-AEP's component objectives as of September 30, 1994, and will be referred to in discussions on each of the four components. (Table 2-1 is presented on the following page.) This table is followed by a discussion of each of the program's four components and ends with a presentation of summary conclusions.

#### **A. Professional and Organizational Development (POD) Component**

The purpose of this component is to strengthen human resource and institutional capacity in the government and private sectors to address urgent environmental problems in Asia. The implementing organizations which cooperate to fulfill this purpose include:

- Environmental Fellowships - managed by The Asia Foundation (TAF) to provide senior-level Asian professionals with practical work experiences that expand their understanding of environmental problems and solutions.
- Environmental Action - managed by the U.S. Environmental Protection Agency (EPA) to field environmental action teams, sponsor internships and conducting government to government training.

**Report of US-AEP Actions by Country and Implementing Organization  
As of 9/30/94**

Activity	Bangladesh	Hong Kong	India	Indonesia	South Korea	Malaysia	Nepal	Philippines	Singapore	Sri Lanka	Taiwan	Thailand	TOTAL
USETI Training	3	5	22	108	2	15	4	41	3	5	13	70	291
TAF Fellowships (Asia to US)	4	7	17	9	12	9	7	12	7	14	8	23	129
TAF Fellowships (U.S. to Asia)	1	0	3	7	0	1	3	2	0	0	2	9	28
EPA Fellowships	0	0	0	0	5	0	0	0	0	2	13	8	28
WEC Exchanges (Asia to US)	0	0	43	15	5	8	4	14	2	0	11	30	132
WEC Exchanges (U.S. to Asia)	2	3	18	20	2	4	1	5	0	7	5	31	98
EPA Short-term TA	0	0	1	2	0	0	0	2	1	0	0	1	7
EPA Training	0	0	0	0	0	1	0	0	1	0	0	2	4
EPA Action Teams	0	0	0	0	1	0	0	2	1	0	0	1	5
TDA Training Grants	0	0	0	0	0	1	0	0	2	0	0	0	3
<b>Subtotal POD</b>	<b>10</b>	<b>15</b>	<b>104</b>	<b>161</b>	<b>27</b>	<b>39</b>	<b>19</b>	<b>78</b>	<b>17</b>	<b>28</b>	<b>52</b>	<b>176</b>	<b>726</b>
Tech Fund I Grants*	1	3	5	8	4	7	3	6	4	0	6	9	56
Tech Fund II Grants*	0	0	13	16	0	18	0	13	8	1	11	13	93
<b>Subtotal Technology Coop.</b>	<b>1</b>	<b>3</b>	<b>18</b>	<b>24</b>	<b>4</b>	<b>25</b>	<b>3</b>	<b>19</b>	<b>12</b>	<b>1</b>	<b>17</b>	<b>22</b>	<b>149</b>
BCN Grants	0	0	2	5	0	0	3	4	0	0	0	1	15
<b>Subtotal Other</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>15</b>
<b>Grand Total</b>	<b>22</b>	<b>36</b>	<b>248</b>	<b>380</b>	<b>62</b>	<b>128</b>	<b>50</b>	<b>202</b>	<b>58</b>	<b>58</b>	<b>138</b>	<b>397</b>	<b>1,779</b>

Tech Fund I grants total 33; Tech Fund II grants to date total 57. However, grantees usually travel to more than one country. This is reflected in this table. In addition to the countries listed above, Bhutan, Maldives, Micronesia, Solomon Islands, Tuvalu, Samoa, Vanuatu and PNG all had some involvement in US-AEP activities, but all posted less than ten events. Most, such as Vanuatu, Samoa, Tuvalu and Micronesia had participated single US-AEP activity, such as sending one participant to a U.S. training course.

- Short-Term Technical Training - managed by the U.S. Environmental Training Institute (USETI) to provide short-term technical training in conjunction with U.S. private sector firms.
- Environmental Business Exchanges - managed by the World Environment Center (WEC), the business exchanges are individually tailored to assist specific Asian business or associations learn about and access new environmental technologies.

The POD component was the first US-AEP component to become operational. All of the component's agreements were signed in 1992, the Inter-Agency Agreement with EPA having been signed first, in August 1992. US-AEP was able to quickly get all of the four POD implementing organization's activities designed and operational within a few months of the May, 1992 Project Paper approval date. This was possible because US-AEP was able to build upon existing organizational capabilities. For example, under a new Cooperative Agreement, US-AEP was able to tap into the WEC and TAF administrative and grant administration systems that had previously been supported by prior USAID grants.

Based on an internal analysis by the US-AEP General Secretariat and TR&D in 1994, the POD component was restructured in order to increase its effectiveness and reduce the management burden at US-AEP. This consolidated structure was not in place until after the evaluation was finished. Nonetheless, some of the findings and conclusions support the analysis leading to the change and carry forth a few recommendations that will be applicable to the component as it is presently configured.

The program and activities of each of the four POD implementing are discussed below.

### **1. Environmental Fellowship Program - The Asia Foundation**

**US-AEP Funding:** \$3.5 million Cooperative Agreement; October 1992-February 1995.

**Organizational Background:** TAF is a private American grantmaking organization with headquarters in San Francisco and 14 field offices in Asian and Pacific countries. Over the past thirty years, TAF has provided grants and fellowships for Asians and Asian NGOs in the areas of economic development; social welfare; environment; and, legal, judicial and political development. Each country office is headed by a TAF Representative.

**US-AEP Funded Program:** The purpose of the US-AEP Cooperative Agreement with TAF was to "provide senior level Asian, Pacific Island and American professionals with practical work experiences that expand their understanding of environmental problems and solutions." Environmental Fellowships are offered to Asians and Americans working in the business, academic, government and NGO sectors for three to six week internships. Environmental Fellowships were envisioned for Asians to study in the U.S. and for Americans to study in Asia.

In each country TAF has developed a selection process, often in conjunction with USAID representatives (if present), other US-AEP representatives, and local environmental leaders in the private sector and government. This process advertises the fellowships, solicits applications from individuals often within targeted sectors, reviews applications and recommends fellows to San Francisco. At this point, the San Francisco office of TAF schedules internships and other learning experiences specific to the fellow, arranges itineraries and logistics and conducts a briefing session for fellows when they first come to the U.S.

**Program Management:** For the project, TAF hired a Project Director to operate out of its San Francisco headquarters and has used its existing field offices to administer the program. This arrangement allowed TAF to get the fellowship program moving quickly and efficiently. While the environment was a new focus for some TAF country offices, for many it was not and relationships already existed within the environmental community.

Despite the potential complications of arranging the itineraries of over 160 fellows, TAF has done an excellent job. In virtually all countries visited by the evaluation team, the fellows were uniformly pleased with the selection process and the logistical support that was provided by TAF. They felt that their internships were on the mark with the right selection of organizations, both public and private; time was well allocated; the organizations that they visited were open and helpful with information and sources of data; and, the support given for transportation and housing was excellent. In a few cases, limited communications in the period after selection and before departure meant that the fellows were given short notice regarding the beginning of their internship. However, this was virtually the only problem that seemed to crop up in the field.

The US-AEP Cooperative Agreement with TAF was not designed to provide support to the fellows once they had returned home. The fellows have been required to write a trip report and often they get a chance to meet their other fellows, but this has been the extent of the follow-up. Although fellows have expressed a desire to continue some level of relationship through alumni groups or a newsletter, US-AEP has decided against supporting such a program. It was felt that because of the wide divergence in topics studied by the fellows that alumni networks would not necessarily provide much value.

As the project implementor, TAF has not always coordinated the fellowship program with other US-AEP implementors. In most, if not all cases, USAID representatives have been involved with the program, however, interaction and coordination the overseas Technology Representatives (Tech Reps) has been infrequent. Opportunities for synergy to support trade and other functions of US-AEP are lost without these other relationships.

**Impact: Table 2- 2. The Asia Foundation**

Activity	Planned	Actual to Date
Asian Fellowships	125	131
U.S. Fellowships	75	34

As can be seen in Table 2-2, TAF has exceeded the planned level of Asia-to-U.S. fellowships, while the number of U.S.-to-Asia fellowships has not kept pace. According to data in TAF's evaluation the number of fellows by home country was highest for the following countries: United States (32), Thailand (23), India (17), Sri Lanka (14), and South Korea and the Philippines (12).

TAF appears to be getting a good mix of public, private and NGO sector participants in the fellowship program. The fellows are at the right level within their organizations to implement changes and influence others within their field. Efforts to recruit women fellows have, however, lagged in a number of countries. The Philippines has done an excellent job of recruiting women fellows, partly due to USAID's concern and experience in this arena.

While the long-term impact of the fellowships may be difficult to measure, fellows have made a number of changes as a result of their experience. The types of immediate changes that can be seen as the result of the fellowships include:

Introduction of new policies and legislation. Fellows with interests in environmental policy and legislation have used their experience in the U.S. to study particular laws and policies for adaptation and implementation at home. In one case, as detailed in Box 2-1, the fellowship resulted in the Philippines Congress passing a new law on air pollution. In another, the Environmental Ministry in Singapore is setting up noise pollution policies based on work in the U.S.

Increase in management/organizational skills in NGOs. Fellows that lead environmental NGOs discussed the increase in organizational skills that they gained by observing and learning from American environmental NGOs. These skills include: organizational development, fundraising, mediation, work with the private sector and leadership development.

Transfer of technology. In several cases, private sector fellows reported that technology transfer was the key result of their experience. In Sri Lanka, a fellow is now working with the EPA to bring its Green Lights Program for energy efficiency and demand side management to the country. This effort is independent of other USAID environmental projects. In India, a TAF fellow was able to develop agreements to represent an American ecotourism company in India.

## **2. Environmental Action - The U.S. Environmental Protection Agency**

**US-AEP Funding:** \$2.27 million, Inter-Agency Agreement; August 1992-September 1997.

**Organizational Background:** The EPA is the federal environmental regulatory agency of the U.S. government. Through its regional offices and laboratories, it works throughout the country with state and local governments in implementing and enforcing environmental policy.

**US-AEP Funded Program:** The EPA responds to specific environmental problems at the request of Asian governments by sending out Environmental Action Teams, conducting government to government training courses, and providing short-term technical assistance. The action teams are lead by experienced EPA staff and may include members from other government agencies, NGOs and the private sector.

In addition to the Action Teams, the EPA provides technical and policy experts on a short-term basis to work with Asian governments on a request basis. The EPA has also developed a series of environmental management training modules. These courses cover risk assessment, environmental economics, environmental policy and enforcement, environmental impact assessment, environmental audits, and waste minimization. The EPA also sponsors internships at its regional offices, primarily in conjunction with TAF.

**Program Management:** The EPA has the ability to operate a diverse and coordinated program for US-AEP in Asia. The backbone of the efforts has been the Action Teams, after which other actions follow. To date this coordinated effort has been most active and successful in Thailand. The EPA has conducted more limited activities in five other countries, by either providing short-term technical assistance or training. In addition, EPA is planning an ambitious training program for officials from the Taiwan Environmental agency for FY 94 and 95.

Recently, in South Korea, the request for several action teams was generated by an EPA reconnaissance visit, whereas in Thailand the request was channeled through USAID. If the mechanism for requesting assistance from the EPA were more clearly developed, more requests would likely be generated for assistance. Especially in non-USAID countries, there does not appear to be a clear mechanism for requesting EPA activities, unless the EPA themselves initiates the requests.

**Box 2-1. Promoting Environmental Change Through National Legislation**

Germaine C. Gochioco, a chief legislative staff officer for Senator Herson T. Alvarez, chairman of the Committee on Environment and Agrarian Reform in the Philippines Senate, was selected by TAF to participate in an environmental fellowship to the U.S. With previous experience in drafting the legislation creating the Philippines Department of Energy in 1992, she indicated to TAF her interest in learning about the U.S. Clean Air Act.

Ms. Gochioco's carefully-arranged fellowship took place in June and July of 1993 and enabled her to visit several U.S. agencies which develop and administer clean air legislation. These agencies included: the Oregon State Department of Environmental Quality, the Western Natural Resources Law Clinic at the University of Oregon; and the Counsel to the U.S. House of Representatives' Subcommittee on Energy and Natural Resources in Washington D.C.

Within a year of her return home, Ms. Gochioco drafted four major measures dealing with environmental management and control. One of these requires the nation-wide removal of sulfur from diesel fuel. At the time of our interview, Ms. Gochioco noted that the major clean air legislation was in committee in the Senate. She indicated that her fellowship visit to the U.S. substantially strengthened her ability to contribute to the development of environmentally and politically informed pollution control legislation in the Philippines.

Officials in the environment office of the Asian Development Bank have specific interest in working more closely with the EPA. Again, however, the lack of a clear mechanism for relaying this request and negotiating terms of reference have hindered progress.

**Impact:** The EPA has completed over one-third of their planned activities for the five year life of the program. If the level of activities maintains this pace, EPA will complete its goals by 1995. However, as mentioned above, there is significant potential demand for assistance, if the EPA can create mechanisms for channeling and responding to requests.

**Table 2-3. Environmental Protection Agency**

Activity	Planned	Actual to Date
Fellowships and Short-Term TA	100	36
Training programs	8	5
Environment Action Teams	20	7
Information Resources		Underway

The most important impact of the EPA program to date has been in actual pollution reduction efforts. In Thailand, the amount of sulfur dioxide from the Mae Moh electrical generating plants was reduced after EPA's recommendations to install scrubbers were implemented. The Thai government also is following the team's recommendations for reductions over the longer-term by curtailing the burning of high sulfur coals during times of the year when weather inversions most commonly occur. This effort is described in greater detail in Section 3.

### **3. Short-Term Technical Training - The United States Environmental Training Institute**

**US-AEP Funding:** \$547,660 Cooperative Agreement; November 1992 - November 1994.

**Organizational Background:** USETI, organized in 1991 by the EPA and U.S. businesses, is a non-profit training institution whose goal is "to provide quality, results-oriented training courses to professionals from industrializing countries in need of effective, reliable environmental solutions." USETI organizes the expertise of participating businesses to design and deliver various environmental training courses to government, private sector and NGO participants from industrializing countries. About half of the training courses, of which there are 22 courses planned for 1994, are held in the United States with the other half being held overseas, including in Indonesia, Thailand and Sri Lanka. About a third of USETI's participants are supported through US-AEP funding.

**US-AEP Funded Program:** The funds from US-AEP were provided to cover a participants' processing fee to USETI (generally \$400), travel and per diem expenses, as well as to make some contribution to USETI's operational costs.

When courses are held in the United States, participants typically spend the first week in Washington, at which time EPA and others are frequently invited to discuss regulatory and policy issues. The second week of U.S. training is normally held on-site at the U.S. company sponsoring the technical training. The courses address a wide range of environmental topics including Water Quality Management, Urban Development and Environmental Policies, Coastal Zone Management and Urban Finance and Cost Recovery.

USETI courses are designed to be highly participatory so that real problems are discussed and participants have opportunities to share their expertise. Each course starts with a presentation by participants of an overview of environmental conditions and a particular problem they are working with in their home countries. Participants are required to put together these case studies prior to the commencement of the training course.

USETI gives particular attention to follow-up and networking among its alumni. Such activities include producing and mailing a newsletter three times a year, sponsoring alumni events and staying in close contact with corporate participants. In addition, companies which sponsor and deliver training seminars reportedly keep in close communication with former participants. US-AEP has included funds for USETI to conduct a limited amount of follow-up and networking activities because of the commonality of interests among course participants.

**Program Management:** By all accounts, USETI is doing an excellent job managing its US-AEP-funded program. The participants in the courses had uniformly high praise for the course content, ability of the training, and relevance of the material. Virtually all participants interviewed also praised the arrangements for logistics, travel and lodging.

The use of USETI courses is largely dependent on the interest of the USAID mission or the Tech Rep, since USETI does not have field offices in Asia. USETI staff, however, do occasionally take reconnaissance trips to Asia to identify participants and ascertain training needs. In practice this has meant that four countries -- Indonesia, Thailand, Philippines and India -- have accounted for 83% of the US-AEP sponsored participants. Each of these countries have active USAID missions which have integrated the USETI training courses into existing projects or strategic objectives. Most Tech Reps have did not initially appreciate the relevance of USETI training to their jobs, however, there is some evidence that this is beginning to change. The Tech Reps now seem to have gone from simply making the USETI course catalogue available to being more proactive in linking their Asian business customers to USETI training opportunities.

**Impact:** USETI has exceeded its expected output accomplishment levels (see Table 2-4).

**Table 2-4. United States Environmental Training Institute**

<b>Activity</b>	<b>Planned</b>	<b>Actual to Date</b>
Participants	225	298
Database of Courses Created		Published and Distributed
Training Modules Developed		Done

The participants that were interviewed felt that the course material was immediately applicable in their current jobs. Some applications of the material include:

Program replication. An NGO leader in Sri Lanka instituted a commercial project in municipal recycling, based on a program highlighted in a course he attended in Indonesia.

Technical Skills Development. The majority of participants have attended courses in highly technical areas, such as wastewater management or air pollution controls. These attendees expressed that they improved their technical skills in the primary areas of their work. With these improved skills they were able to develop new programs, expand existing programs and train their colleagues in new technologies and methodologies.

Project Management. A number of NGO, government and USAID local hire project managers have attended USETI courses on project management. These courses provided basic training on management issues and techniques related to environmental projects that the participants were able to apply to their own projects at home.

Developing Working Relationships With U.S. Businesses. Participants become familiar with U.S. businesses operating in the area of study of the courses. This face to face contact is important for building relationships and developing business contacts.

Developing Working Relationships In-Country. USETI courses often bring together government policy makers, business leaders and NGOs to identify solutions to environmental challenges. These relationships have been invaluable to fostering the dialogue and understanding necessary to solve technically and politically complex environmental problems.

#### **4. Environmental Business Exchanges - The World Environment Center**

**US-AEP Funding:** \$3.47 million Cooperative Agreement; September, 1992 - September, 1994.

**Organizational Background:** WEC, founded in 1974, is an independent non-advocacy, non-profit, organization whose mission is to contribute to sustainable development by strengthening urban and industrial health, safety and environmental management practices worldwide. WEC has regional offices in Jakarta, and Bangkok.

**US-AEP Funded Program:** WEC sponsors Environmental Business Exchanges (EBE) between the U.S. and Asia. The U.S. to Asia EBEs are individually tailored exchanges to assist specific Asian business or associations. The Asia to U.S. EBEs include factory and industry visits designed around specific environmental technologies, e.g. pollution control and monitoring technologies.

These two components were set-up around the following three programs: 1) the Factory Assessment Program which was designed to enable Asian industry representatives to become familiar with U.S. expertise in the area of conducting environmental audits of industrial facilities, 2) Technology Assessment Program, to provide a vehicle for small groups of Asian industry representatives to meet with U.S. counterparts to discuss US technologies, and 3) the Corporate Environmental Program to bring U.S. and Asian business leaders together to discuss environmental issues and regulations.

**Program Management:** The WEC appears to be doing a good job linking the needs of U.S. and Asian businesses. The WEC received praise from most participants for its programming of their visits, and its handling of logistics.

While the WEC program has significant possible tie-ins to increasing trade and business, few of the countries with just a Tech Rep, with the exception of Taiwan, have significantly

#### **Box 2-2. Exchange Initiative and Trade Results: The Indian Boiler Manufacturers Association**

In mid-1994 seven executives of leading Indian boiler manufacturing companies participated in a WEC-sponsored environmental business exchange to the U.S. to study the latest in fuel-efficient and environmentally friendly boilers. The objective of the exchange was to explore if U.S. technologies were available that could be used in India to help meet the country's increasingly stringent environmental regulations.

The president of the Indian Boiler Manufacturers Association, Ms. Baldawala, served as the delegation's coordinator. In addition to her role in the Association, she directs her own boiler company, and leads an energy conservation research firm.

The exchange, which included visits to nine firms in five states, was "beautifully designed," in Baldawala's words. In addition to visiting U.S. boiler manufacturers, the timing of the visit enabled the Indian delegation to participate in the General Meeting of the American Boiler Manufacturers' Association.

Business linkages developed along every step of the itinerary, and three business deals were already in process as of August 1994. Technologies discussed included catalytic converters, dirty fuel treatment, alternative uses of fly ash, and new boiler designs. The success of the business exchange was due in part to production of a pamphlet describing the activities of the Indian firms, which was custom-made for the exchange. This pamphlet was shared with WEC staff and contacts at the U.S. sites in advance of the exchange.

utilized the program. About 77% of the EBEs to the U.S. came from India, Thailand, Indonesia and Philippines, all countries with USAID missions.

**Impact:**

**Table 2-5. The World Environment Center**

<b>Activity</b>	<b>Planned</b>	<b>Actual to Date</b>
U.S. to Asia Exchanges	200	98
Asia to U.S. Exchanges		145
Business Development Surveys		4

The WEC exceeded its target of a total of 200 business exchanges with 243 EBEs in both programs.

WEC conducted an internal assessment of its US-AEP activities in 1994. The exchanges have shown promising evidence of impact, both in the trade and environmental areas. (For an example, see Box 2-2). Specifically, the WEC evaluation team had the following conclusions about the Cooperative Agreement's accomplishments:<sup>1</sup>

Potential business transactions. More than half of Asian respondents in the WEC evaluation indicated they would purchase pollution control equipment within three years of their exchange. And, almost one-fourth of Asian exchange participants stated that they planned to enter into licensing, distributorship or similar business relationships with U.S. environmental technology companies within the next three years.

New Technical Skills Developed. New skills were learned by participants in waste management techniques and environmental auditing. These skills were applied on the job and taught to colleagues.

Environmental Improvements Made. According to the WEC evaluation, sixty-seven percent of Asian respondents stated that the environmental actions they plan to institute over the coming three year period will result in a 5-25% reduction in effluent emissions from their facilities.

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<sup>1</sup> World Environment Center (July 28, 1994), Evaluation of WEC Activities Under the US-AEP Cooperative Agreement.

## B. Biodiversity Component

**US-AEP Funding:** The Biodiversity Conservation Network - \$20 million Cooperative Agreement; May, 1992 - September, 1997

**Organizational Background:** The Biodiversity Conservation Network is administered by the Biodiversity Support Program, funded by USAID. The program is implemented by a consortium of well-regarded U.S. PVOs -- World Wildlife Fund/US, the Nature Conservancy and the World Resources Institute.

**US-AEP Funded Program:** The purpose of the BCN is to support site-specific efforts to conserve biodiversity through the use of an enterprise-oriented, community-based approach to biodiversity conservation. BCN provides planning and implementation grants to local NGOs to carry out specific research programs that combine biological, socio-economic and enterprise-oriented approaches.

The BCN grant program has two stages: planning grants followed by a more limited number of implementation grants. In the first stage, BCN will give out 20 to 30 planning grants to organizations. These grants provide NGOs with resources to develop a comprehensive proposal for an implementation grant. In the second stage, BCN will choose 20 NGOs for implementation grants -- several year grants that will allow the NGOs to carry out their proposed integrated program.

**Program Management:** The initial phase of the program was slower than expected. BCN assumed that they would not have to provide any technical assistance at this part of the process, so there were few field visits to NGOs other than to announce the program. Technical assistance was not planned or offered. A clearer announcement focusing on the research aspect of the program and/or technical assistance at this early stage would have provided higher quality planning proposals to BCN. Some NGOs looked at BCN as a source

### Box 2-3. US-AEP as a Catalyst in Pusan, South Korea

The City of Pusan is planning on spending up to \$245 million to construct a new wastewater treatment plant. US-AEP's role in helping the U.S. to participate in this project can be described as an attempt to build bridges between CH2M-Hill, the only U.S. firm in a position to competitively bid on the project, and the city of Pusan.

The Tech Reps have made numerous trips to Pusan to discuss the project, develop relationships with key municipal officials, and advocate the use of U.S. technology. One of the Tech Rep's first actions was to arrange a WEC Environmental Business Exchange opportunity to take Pusan city officials to CH2M-Hill's wastewater treatment plant in Virginia for a demonstration of a biological nutrient removal system. Apparently, the trip was enough to convince the Pusan officials that the technology was relevant to the needs of Pusan.

CH2M-Hill stated that US-AEP was most useful as an information broker to get information from the Pusan government and to advocate on behalf of CH2M-Hill. CH2M-Hill also thought that it would have been difficult to have access to the Pusan government's decision-makers without introductions by US-AEP; it was US-AEP's status as a quasi-government U.S. organization that was successful in getting phone calls answered and meetings arranged. US-AEP, as the sponsor of the trip made by government officials to CH2M-Hill's Virginia operation, also provided a useful buffer for minimizing conflict-of-interest perceptions that could have arisen from a U.S. bidder arranging and paying for Pusan officials to visit the U.S. The Pusan wastewater treatment plant is the first of ten wastewater treatment plant procurements that the city of Pusan is planning over the coming several years, and just one of several large environmental infrastructure projects that US-AEP's Tech Reps are currently tracking.

of support funding for their existing programs, rather than an a research/action program. For this reason, BCN received more planning grant applications than expected. However, many of these applications were of much lower quality than expected, requiring more effort than was anticipated to produce proposals which met standards such that they could be funded.

The review process within BCN was rigorous and multi-staged. Each grant was reviewed by a number of separate panels who commented on a narrow range of interests. Especially for early applicants, before BCN had settled on the process, this meant that each panel would suggest areas of improvement that the NGO would have to respond to, before review by the next panel. The NGOs interviewed found this process frustrating, although those that ultimately completed a proposal thought that the comments given to them helped to strengthen their proposed activities.

While some consider BCN to be US-AEP's "green core", it has not been well integrated with other US-AEP programs. This lack of integration has been largely because of uncertain structural responsibilities within USAID's ANE Bureau, however, responsibilities have recently been clarified and the biodiversity component is now directly managed by the US-AEP Secretariat. Nevertheless, BCN still operates fairly independently from the rest of US-AEP. The research nature of the BCN agenda does not always fit well with US-AEP's practical results-oriented philosophy. The Biodiversity Support Program provides program management assistance and therefore works separately from the Secretariat or TR&D. The assessment team found grantees tended to be unaware of other US-AEP activities.

With its separate agenda, BCN is also generally not integrated well within the USAID missions' portfolio. BCN makes its own funding decisions without regard to Mission strategic objectives or existing portfolios. However, USAID missions are asked to comment on proposed BCN grant actions. Even where missions have chosen to focus on certain geographic areas or types of natural resource projects, BCN is independent of these efforts. For these reasons, it has a low profile in the field.

**Impact:** **Table 2-6 . Biodiversity Conservation Network**

<b>Activity</b>	<b>Planned</b>	<b>Actual to Date</b>
Planning Grants	24	15
Implementation Grants	20	3

At the present stage, BCN is not expected to have any impact as the first implementation grants have only recently been awarded.

### **C. Technology Cooperation Component**

The purpose of this component is to provide trade linkages between U.S. environmental firms and the Asian marketplace. The implementing organizations for this component are;

- U.S. and Foreign Commercial Service (US&FCS) - participates through an Inter-Agency Agreement with the Department of Commerce to field Environmental Tech Reps in nine offices throughout Asia.
- Center for Trade and Investment Services (CTIS) - a USAID office, developed and manages a computerized trade lead system.
- National Association of State Development Agencies (NASDA) - provides grants for businesses to explore environmental business opportunities in Asia.

Each of these programs is described in further detail below.

#### **1. Environmental Technology Representatives**

**US-AEP Funding:** \$2.3 million, Interagency Agreement; October, 1992 - October, 1994

**Organizational Background:** The U.S. and Foreign Commercial Service (US&FCS) of the Department of Commerce helps U.S. firms to compete more effectively in the global marketplace. US&FCS has a network of trade specialists in 68 U.S. cities and 66 countries world-wide. US&FCS offices provide information on foreign markets, agent/distributor location services, trade leads, and counseling on business opportunities, trade barriers and prospects abroad.

**US-AEP Funded Program:** The purpose of this activity is to augment the resources of the US&FCS with technical expertise to provide assistance to U.S. businesses in identifying Asian demand for U.S. environmental technologies. Activity is principally carried-out by nine Environmental Tech Reps who are resident in Asia.

Specifically, US-AEP provides the salaries and expenses of local-hire US-AEP Tech Reps and assistants in the following countries: Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand. Tech Rep offices are generally staffed with one engineer, one marketing specialist and an administrative support assistant. The Tech Reps are responsible for: generating trade leads for environmental control technologies and sending these trade leads to the US-AEP-funded data base maintained in Washington; organizing in-country Steering Committees to coordinate US-AEP activities and to review workplans developed by the Tech Reps; and, operating as the liaison between DOC/Washington, USAID missions and US-AEP in Washington for the Technology Cooperation component. This includes reviewing and approving proposed activities of other US-AEP implementing organizations, such as NASDA and WEC, in non-USAID presence countries.

**Program Management:** The Tech Reps play an important role in US-AEP; in five countries -- Hong Kong, South Korea, Malaysia, Singapore, Taiwan -- they are the only US-AEP resident personnel. In non-USAID presence countries, by default, the Tech Reps have come to be seen as the US-AEP program representatives. In the rest of the countries, they share this role with the USAID missions. But even here, the US-AEP mantle primarily rests upon the Tech Reps, as the POD activities controlled by the mission often are not publicly known as US-AEP activities. The issues that this raises are discussed in greater detail in the following chapter.

The Tech Reps appear to have different relationships with the US&FCS office in each country. In Thailand the Tech Reps have been resident in the US&FCS office, in other countries the Tech Reps have an independent identity with separate offices. In general, the closer the office is physically to the US&FCS office, the more the US-AEP office is involved in broader activities of the US&FCS.

The Tech Reps have been given a performance mandate to generate one trade lead per day. (This quota was arrived at on the basis of a task and time analysis.) Actively generating trade leads and delivering those leads directly to interested U.S. businesses is somewhat of a modification from US&FCS' traditional role. Throughout the initial implementation of the trade lead system the Tech Reps voiced concern that the quota did not lead to the generation of high-quality information. US-AEP management, however, felt the quota necessary in order to provide Tech Reps a clear performance incentive to generate trade lead information. Now that the quantity of trade leads has been brought up to acceptable levels, the Secretariat has recently undertaken several actions to improve the quality of the leads being generated. These actions have included having the Environmental Technology Network For Asia (ETNA) staff devise a quality rating system so Tech Reps receive feed-back on the quality of their work. In addition, the US-AEP Secretariat is currently devising a trade lead quality incentive rating system that will financially reward Tech Reps based on their ability to produce a sufficient quantity of high-quality trade leads.

Each Tech Rep was supposed to set up a local Steering Committee to help guide the local program. The Steering Committee concept is flexible and thus the organization and activities of these committees varies from one country to the next. Generally, Steering Committees will include representatives of USAID (if country presence), the host government and private sector associations, such as chambers of commerce. As will be discussed further in the next chapter, Steering Committees are not functioning in most countries.

In countries without USAID missions, the Tech Reps have generally not had a great deal of involvement with POD activities. However, the Tech Reps have not perceived this to be a part of their official job description and have felt that it takes away from their primary responsibilities. In some countries, the Tech Reps have little knowledge or awareness of POD activities and how POD activities can be used to encourage trade and technology transfer. The Secretariat is currently taking steps to resolve this issue. One idea being considered is to include an item in the Tech Rep's personnel performance review that considers the level of POD activities that they have programmed. (One example of how the Tech Reps in South Korea have usefully used POD activities is presented in the box on the preceding page.)

US-AEP's most recent data on trade leads and sales, provided by the Tech Reps through US-AEP/Washington is shown in Table 2-7.

**Table 2-7. US-AEP Trade Leads and Sales by Country\***

<b>Country</b>	<b>Trade Leads (Percent of Total)</b>	<b>Number of Sales (Percent of Total)</b>	<b>Value of Sales (Percent of Total)</b>
Hong Kong	130 (14%)	1 (6%)	\$41,000 (<1%)
India	65 (7)	-	-
Indonesia	90 (10)	1 (6)	200,000 (2)
South Korea	230 (25)	5 (28)	4,588,400 (52)
Malaysia	120 (13)	2 (11)	100,000 (1)
Philippines	105 (11)	1 (6)	5,000 (<1)
Singapore	95 (10)	3 (17)	982,000 (11)
Taiwan	18 (2)	2 (11)	2,150,000 (25)
Thailand	63 (7)	3 (17)	690,000 (8)
<b>TOTAL</b>	<b>916</b>	<b>18</b>	<b>\$8,756,400</b>

\*Data as of October 1, 1994. These figures indicate trade leads or interactions Tech Reps have had with individual companies, and not from Overseas Program Fund grants through NASDA. Percentages may not total to 100 due to rounding.

From table 2-7, we find that:

- The number of trade leads has been substantial; they range from 18 in Taiwan to 230 in South Korea. (This variation is due not only or necessarily to differences in Tech Rep performance, but also to differences in office start dates, local economic conditions, and so on.)
- Three countries (South Korea, Hong Kong and Malaysia) account for over half the trade leads from nine countries.
- The number and value of sales appears to be only moderately associated with number of trade leads. South Korea does rank first in both trade leads and value of sales, but Hong Kong, which is second in trade leads, is seventh in value of sales. Taiwan ranks ninth in trade leads but second in value of sales.

**Impact:** From March 1994, when data collection commenced, through September 1994, 775 product leads and 23 project leads were sent. During the same period, actual sales by U.S. firms to Asian businesses and governments, with the assistance of US-AEP Tech Rep offices, totalled 18 in number and \$8.8 million in value. These actual sales figures are probably an underestimate, since companies may make purchases without the Tech Reps' knowledge.

## **2. Environmental Technology Network for Asia**

**US-AEP Funded Program:** The Environmental Technology Network For Asia (ETNA) is implemented by USAID's Global Bureau/Center for Trade and Investment Services (CTIS) to match trade leads from Asia with the U.S. companies enrolled in the US-AEP trade lead program. The information on the trade lead (entered by the Tech Rep) is matched against U.S. firms contained in the database and forwarded to U.S. firms identified as having a commercial interest in the information.

**Program Management:** To develop an environmental trade lead system independent of DOC's overall trade lead system has been a tremendous undertaking, one that now appears to be showing signs of fruition. The earlier system contained a number of deficiencies which prevented it from optimal use. Information in the trade leads themselves has sometimes been inaccurate or misleading, often due to the nomenclature system that must be used. In other cases, some companies are inaccurately registered for trade leads in certain sectors. Responses to the trade leads show that many companies will respond to any lead, even if is not in their line of expertise, at the expense of the Tech Rep and the Asian business' time. Finally, the system has not provided feedback to the Tech Reps to let them know if sales are made as a result of the leads. As a consequence, the ETNA system was reported by about half of the Tech Reps to have produced very few meaningful leads as compared with exchanges and other more direct contacts.

Several improvements in the ETNA system have been completed in recent months, in large part in response to concerns expressed by Tech Reps and U.S. businesses. These include:

- Replacing the current, rather cumbersome computerized matching system with a more streamlined, customized system (to be called Environmental Technology Opportunities Software);
- Placing the leads clearinghouse function directly in ETNA, thus eliminating a previously existing bottleneck;
- Initiating a practice of selectively making personal calls to U.S. firms when leads are especially promising.

### **3. Environmental/Energy Technology Fund**

**US-AEP Funding:** \$1.1 million; Tech Fund I - Buy-In to Project; Tech Fund II - Cooperative Agreement; September, 1992 - September, 1996

**Organizational Background:** The National Association of State Development Agencies (NASDA) is a full-service trade organization providing a wide range of services for directors of state economic development agencies. Participants in NASDA include more than 40 state development agencies, numerous development specialists at all levels of government and several dozen private sector interests.

**US-AEP Funded Program:** The Environmental/Energy Technology Fund provides grants to help U.S. businesses export environmental products and services to Asia. The Fund's primary activity has been administering a matching grant program which provides U.S. firms funds to explore environmental business opportunities in Asia. For the most part, NASDA grant funds have been used to co-finance the travel of U.S. business persons to pursue trade and investment opportunities. NASDA's mandate is to help small to medium size firms, defined as having annual sales of between \$250,000 and 50 million, and between 4 and 200 employees. Grant guidelines permit the Tech Funds to consider individual grants of between \$10,000 and \$20,000.

NASDA widely markets the Tech Fund through its network of state development agencies, speaking engagements and advertisement in journals. Increasingly, NASDA has been involving chambers of commerce and manufacturers associations in its activities.

**Program Management:** The partnership with NASDA has been very successful in the generation of U.S. to Asia environmental technology transfer. A partnership with NASDA was attractive to US-AEP because it took advantage of NASDA's existing grant management capability, offered a mechanism to leverage private sector resources, and had the potential to generate large volumes of trade for U.S. firms.

NASDA feels that US-AEP has set up a management structure that rewards creativity and innovation. Because of this operating environment, the NASDA's activities have evolved over the course of implementation. They have been able to develop new activities as new needs have surfaced, such as developing a seminar for firms on how to do business in Asia.

One reason for NASDA's success has been its attention to the types of firms that participate in its programs. It carries out the initial assessment of a firm's ability to carry out commercial transactions in the environment/energy field. Utilizing the Tech Reps, it then sets up meetings with Asian firms that best fit the company's profile. Recently, based on concerns that some of the American firms have not been sensitive to how business is conducted in Asia, US-AEP and NASDA started a seminar on "Doing Business in Asia."

The only major program implementation issue for NASDA has been the reverse trade mission -- Asian firms to the US. The Tech Reps stated that the requirements for such missions were too complicated for many Asian firms to attempt to comply with. Based on these concerns, NASDA has recently revamped this aspect of the program.

From its own point of view, NASDA has experienced some frustration, on occasion, with some operational aspects of the Tech Fund. This is in large part due to some incidents in which prospective grants which had been approved by the NASDA review panel (and thus already by the Tech Rep and the USAID Mission) but were subsequently rejected by US-AEP. NASDA found these incidents detrimental to the independence of the panel.

At the same time, US-AEP has found close guidance of the selections occasionally to be needed. The majority of proposed Tech Fund grants have been clearly focused on the environmental market criteria identified in the US-AEP - NASDA cooperative agreement. A small minority, however, were (at least in the view of some) simply traditional trade missions featuring prominent personalities but lacking in a clear environmental focus.

**Impact: Table 2-8 . NASDA**

Activity	Planned	Actual to Date
Tech Fund I	25 grants	33
Tech Fund II	50-100 grants	57

Of the 57 grants approved in FY 1994, 50 involved U.S. firms visiting Asia, while 7 involved grants to Asia-based firms to visit the U.S. Since the target was 30 Overseas Program Fund (OPF) awards to Asian firms, this shortfall is significant. As we note in Section 3 of this assessment, at least part of an explanation for the shortfall must lie with the difficulty, as perceived by Tech Reps and others, in completing the OPF proposals.

According to NASDA's report to US-AEP on results of Tech Fund II, the \$1.2 million in FY 1994 grant funds leveraged over \$300 million in sales from Tech Fund II activities as of late October 1994.

#### **D. Environmental and Energy Infrastructure (EEI) Component**

**US-AEP Funded Program:** US-AEP has lined-up a host of U.S. implementing partners to help U.S. firms be able to identify, compete for and win infrastructure contracts in Asia. The assistance US-AEP has made available covers each of the steps which have been identified in the infrastructure project development process. These steps are identified in the matrix on the following page, along US-AEP-supported institutions and their role in helping U.S. firms gain access to Asia's infrastructure development market.

The EEI component, relatively new as compared with other components, is intended to encourage environmental and energy-efficient infrastructure investments in Asia, for the reduction of pollution and conservation of natural resources. Through one arm of the component, the Infrastructure Finance Advisory Service (IFAS), information, support and outreach services for infrastructure financing opportunities are provided. K&M Engineering and Consulting Corporation manages this service, although IFAS is a cooperative effort between USAID, which includes the U.S. Export-Import Bank, the Overseas Private

Investment Corporation, the Trade and Development Agency and the Small Business Administration.

Through another of the component's elements, the Environmental Enterprises Development Initiative (EEDI), grant funds are provided to U.S. firms to engage in pre-investment activities relating to environmental projects. The U.S. Overseas Private Investment Corporation (OPIC) manages this element.

The Infrastructure Enhancement Grants activity, managed by the Trade and Development Agency, was closed out in mid-1994, because TDA was unwilling to comply with the USAID priority to apply funds only to USAID-presence countries.

Finally, two additional parts of this component, the Urban Environmental Infrastructure Program (featuring Housing Investment Guarantee efforts guided by US-AEP Infrastructure Reps in Indonesia and Thailand), and a clean energy initiative with DOE's ADEPT program, were both in initial stages at the time of our review.

Also included under this component are funding for an infrastructure advisor at the Asian Development Bank in Manilla, and an agreement with the Bankers Association for Foreign Trade (BAFT) to provide U.S exporters information on sources of trade finance.

Environmental Infrastructure Development Process	US-AEP Supported Institution	Role
Early Identification of Project Financing Earmarked for Infrastructure Development in Asia	An Infrastructure Development Advisor at the Asian Development Bank	To help alert US-AEP Tech Reps and US-AEP-Washington of upcoming projects that will be let for bid and financed by the ADB.
	An Infrastructure Development Advisor in Indonesia	Like Thailand, this activity is closely linked with USAID/Indonesia's RHUDO, and provides "enhancement grants" to persuade host governments to include U.S. firms in undertaking municipal infrastructure projects.
	An Infrastructure Development Advisor at the US-Thai Development Partnership Office/Bangkok	To link US-AEP activities with USAID/Thailand's long-standing program of supporting Thai municipal development. The program is coordinated with USAID/Thailand's RHUDO.
Financing for Pre-feasibility Studies	An interagency agreement with the Overseas Private Investment Corporation	OPIC provides pre-investment services to U.S. firms in the form of financing for market-entry assessments, business plans, technology checks, investor reviews, and pilot project implementation. OPIC assistance is limited to \$100,000 per project.
Financing for Feasibility Studies	A coordinated effort with the U.S. Trade Development Agency	TDA provides: training grants for public sector officials, if U.S. firms are selected in bidding competition; and grants to the host-country government to be used to conduct design/feasibility studies if the studies are conducted by U.S. engineers. These grants must be requested by the host government and have been as large as \$500,000.
Project Financing	A Cooperative Agreement with the Bankers Association for Foreign Trade	BAFT provides U.S. environmental exporters information on trade finance and helps them identify banks that offer finance to fit their needs. (AXCAP Program)
	An Interagency Agreement with the U.S. Export-Import Bank	The EX-IM bank is responsible for providing loans to U.S. businesses needing transactional or project financing.
Assistance to U.S. firms in identifying and financing efforts to become engaged in environmental infrastructure projects in Asia	The Infrastructure Finance Advisory Service, through a Contract with K&M Engineering and Consulting Corporation	Establish working relationships with financing agencies, commercial banks and investment funds to help U.S. firms identify sources of debt and equity financing. In addition, IFAS will help U.S. firms put together financing proposals in a manner that will be acceptable to U.S. government financial institutions.

**Program Management:** This final component of US-AEP has been the last and final one to be set up. For the most part, it is using existing facilities at a number of institutions to open the possibilities of providing integrated U.S. assistance for large infrastructure projects. At present few opportunities to utilize this component have developed, although a number of infrastructure projects are being identified in South Korea, India and Thailand. Depending on the type of project, the needs of the U.S. firms involved and the financing available from local sources, the various aspects of this component may be utilized.

There may be some additional reasons for the lack of use of this component. The first is that Tech Reps, in most cases may not be experienced enough to penetrate the decision circles responsible for designing, approving and awarding large infrastructure projects (South Korea excepted). The second is that larger multi-national firms do not need US-AEP to broker their way into existing programs, such as OPIC or the Ex-Im Bank, or may not need any U.S. government assistance to penetrate the Asian infrastructure market.

## **E. Summary Conclusions**

### **Professional and Organizational Development (POD) Component**

**POD activities have been successful in establishing relationships between key public and private sector players in the environmental field in Asia and the United States.** By providing training, internships and the ability to view technology on-site in the U.S., US-AEP has strengthened relationships between this key group of individuals and the institutions that they represent.

**POD offers a diverse menu of activities to promote training and technology familiarization.** The internships, training courses and business exchanges offer a broad means to attempt to deal with the needs of Asians in the environmental sector. The program has been flexible enough to provide for the diverse needs of individual participants in a manner that each participant has felt well served by the experience.

**US-AEP has proven to be a convenient and flexible mechanism for providing training in support of USAID bilateral environmental programs.**

**POD activities have been carried out in a timely and professional manner and are well regarded by the participants.** Virtually all participants that were interviewed were uniform in their praise for the professional manner in which the training and internships were carried out. Both the logistics and the types of activities programmed were of high quality.

**The demand for POD activities remains high.** Ultimately, the level of POD activities are likely to be limited only by the amount of funds available. Although, to date, the demand for POD activity has yet to exceed the level of funding that US-AEP has allocated for this program component. The desire for training and internships to the U.S. is high, due to the leadership role that the U.S. has played in the environmental technology field.

**Impact from POD activities can already be seen in Asia, although it is not being measured well.** Training and internships has provided technical and managerial skills to the participants, and they have generally been able to apply these skills upon return to their jobs. In addition, the knowledge gained from the program has resulted in the development of new policies and legislation, new regulations and new programs, all benefiting the environment. Finally, POD activities have resulted in trade between the U.S. and Asia, particularly as a result of the WEC and USETI programs. However, while the implementors are doing a good job of tracking activities, impact data has not been routinely collected.

**Use of POD resources has been significantly higher in countries having a USAID mission, as compared with countries having only a Tech Rep office.** The principal reasons for this have been twofold: to date, Tech Reps have not had a professional incentive or mandate to program POD activities; and Tech Reps have been too preoccupied with getting trade lead systems operating to have been able to give POD management the attention it deserves. However, several management adjustments have either been recently introduced, or are under consideration, that will likely result in the Tech Reps increasing their use of POD activities. Changes being contemplated include appointing a Regional Field Director to provide assistance in programming POD activities and introducing performance incentives to encourage Tech Reps to identify POD candidates.

**POD activities have not been well integrated into the Technology Cooperation activities.** Presently, most POD activities are administered and viewed separately from technology transfer. Internships and chances to view technologies in the U.S. could be more frequently offered to Asian firms that are attempting to partner with U.S. firms in a given technology or service sector. On a firm by firm basis, using POD in this way would allow Asian and U.S. firms to further develop relationships, while they are developing an understanding of each other's capabilities, strengths and weaknesses. U.S. firms and NGOs could also better utilize reverse internships to Asia to establish relations and to better understand the marketplace for their goods and services.

**The lessons learned by US-AEP in the POD component have appropriately shaped its reorganization.** While the POD activities over the first two years have been quite successful, US-AEP has identified a series of lessons learned which it has used to recast this component. USAID missions and Tech Reps will be provided greater efficiency and convenience through the new streamlined POD management contract.

### **Biodiversity Conservation Network (BCN) Component**

**BCN is principally a research program, albeit one that attempts to integrate biological, socioeconomic and enterprise interests.** The BCN agenda is a not a general support program for biodiversity but a research program that has been designed to test the hypothesis linking enterprise development and conservation practices. This multi-faceted program requires that participating NGOs propose and implement complicated programs of action/research.

**The grantmaking process was slower than expected due to NGO difficulties understanding and meeting BCN's research agenda.** Many NGOs thought that BCN was a general support program to which they could apply for grants. Due to lack of outreach on the part of BCN during its initial stages of promotion, many NGOs misunderstood the purpose of the program and submitted proposals that did not meet basic requirements. Lack of planned technical assistance to NGOs in this beginning stage further delayed the preliminary grantmaking cycle.

**BCN has not been well integrated into the US-AEP program.** BCN acts as a stand-alone component of US-AEP. It does not interact with the other components, although it could benefit from closer ties with the POD component. Its program management, until recently, has been separate from US-AEP and USAID's role in the management of BCN has historically been limited. The results and impacts of BCN, as the project is currently structured, are likely to have little impact on the direction of US-AEP, despite BCN's criteria for including enterprise potential as one of its criteria for approving NGO grants.

### **Technology Cooperation Component**

**The Technology Cooperation component is a highly visible, often times the only visible US-AEP component (especially in non-USAID presence countries).** US-AEP's overseas identity is most associated with the offices of the Tech Reps in Asia. In a number of countries, and particularly those without USAID missions, the Tech Reps essentially are perceived as the US-AEP program.

**The NASDA Program is having great success in generating U.S. technology transfer with Asia.** By any standard, the NASDA program has generated enormous volumes of trade. NASDA is providing the right type of service for U.S. businesses and has been able to flexibly respond when issues arise. Part of the success of the program must be shared with the Tech Reps who provide key linkages with Asian firms on the ground.

**Technology Cooperation provides an important "on-the-ground" presence for the promotion of U.S. environmental technologies.** This component provides an excellent means to focus on U.S. to Asia environmental trade in technology and services. The specific mandate of the Tech Reps, whether or not they are in the same office as the rest of US&FCS, means that the environment is getting special attention in U.S. trade promotion efforts. The Tech Rep offices are becoming well known in the environmental community of public and private sector organizations. The offices of the Tech Reps offer a potential one-stop shop for U.S. and Asian firms who are interested in environmental technology work in Asia.

**The trade lead system was not providing appropriate feedback to the Tech Reps.** Tech Reps did not know if trade leads are converted to sales, due to the lack of feedback data from CTIS. The early view from the field was that the trade lead system did not work (meaning did not lead to sales) despite the informal surveys of the businesses listed in the database that sales have occurred from the trade leads. Data on the amounts and types of sales is needed by the field where it could be used more effectively to shape programming and trade efforts.

**The trade lead system is working to overcome initial deficiencies.** The design of a new system such as CTIS requires time to design, implement and modify. Presently, the system is implementing modifications based on initial problems that have been identified over the last year, such as the taxonomy of trade lead requests. As these deficiencies are overcome and the system itself is running smoothly, the focus should shift to an assessment of the system's ability to effectively serve Asian clients.

The US-AEP Secretariat has given careful attention to monitoring and improving the trade lead system. These adjustments have dramatically increased the number of U.S. firms involved in the ETNA information network and have resulted in improving the quality of the leads generated by the Partnership's overseas Tech Reps. There remains, however, an issue concerning the validity of how the value of U.S. trade resulting from trade leads is calculated and as to what degree Asian firms have found the system useful for identifying and sourcing U.S. environmental technologies.

### **Environmental and Energy Infrastructure Component**

**There is a large and growing environmental infrastructure market in Asia.** A decade of tremendous industrial and urban growth across most of Asia has left the region's countries with a growing demand for environmental infrastructure services, many of which are beyond the abilities of governments to fund. Increasingly, the region's governments are turning to innovative methods for leveraging private sector financing to meet their infrastructure needs. Thailand's requirement that new high-rise buildings and hotels build their own wastewater treatment facilities is but one example of attempts to shift infrastructure costs to the private sector. Build-Own-and-Transfer (BOTs) financing schemes have also gained increased popularity throughout the region (including in the Philippines, Indonesia, South Korea, China, Sri Lanka and Thailand), and present significant opportunities for international firms to compete in joint ventures to design, construct, own and or operate large infrastructure projects.

**US-AEP funding, through its partnership with TDA, has been used to help U.S. firms win large contracts in Malaysia and Singapore.** In addition, the work of the infrastructure advisors in Bangkok and Jakarta looks exceptionally promising, as does the work of the Tech Reps in South Korea. In fact, in South Korea the Tech Reps have successfully accessed TDA resources to enable a U.S. firm to be in a competitive position in a bid to design, build and operate a \$245 million wastewater treatment plant. Although TDA is no longer receiving US-AEP funding, they have continued to cooperate with the US-AEP program and recently worked with the Tech Reps in South Korea to help a U.S. firm design a wastewater treatment plant. (See box on page 31)

**Early identification of infrastructure projects can lead to opportunities for U.S. businesses to market their technologies to Asian decision-makers.** However, there is currently no process for linking POD activities with upcoming environmental infrastructure projects. The assessment team is aware of two cases where POD activities have successfully led to U.S. businesses being able to sell technologies as a result of contacts made through POD activities. One example is that of a South Korean Municipal official participating in a

WEC exchange to visit a wastewater treatment facility in Virginia that is managed by a firm now competing to build a similar facility in Pusan, South Korea. A second example is that of Thai officials participating in a USETI-sponsored workshop in New Jersey at a company which later was able to sell air scrubbers to Thailand's Electricity Generating Authority.

**The EEI component appears to be comprehensive, although as yet is largely untested. This component attempts to cover the basic needs for the support of U.S. firms to enter into large energy/environment infrastructure projects in Asia. However, several US-AEP-funded services under this component have not been utilized to any great degree, and this seems particularly true for IFAS, OPIC and BAFT. There are three possible reasons for this. The first is that this component is the newest and is just getting off the ground. The second is that the Tech Reps are not sufficiently connected in most countries, South Korea, Indonesia and Thailand excepted, to assist U.S. firms to bid on and enter in these projects. The final reason may be that larger multi-national firms do not need US-AEP to broker their way into existing U.S. government programs such as OPIC and EX-IM Bank, or may not need U.S. government assistance to penetrate the Asian environmental marketplace.**

### Chapter 3 Analysis from Country Visits

US-AEP works in thirty-four Asia/Pacific countries and territories and has a dedicated staff presence in ten countries. US-AEP's on-the-ground staff presence varies from country to country but generally follows two basic patterns: countries in which there is both a resident USAID mission and a US-AEP-supported Technology Representative office; and countries where there is a Technology Representative office but no USAID mission.

While US-AEP operates in 34 countries, the ten countries visited by the assessment team represent over 91 percent of the project's total overseas activities, and over 92 percent of POD activities. Highlights of the country visit reports are presented in this report as Annex B. The US-AEP presence for each of the ten countries visited by the assessment team is presented in the Table 3-1 below.

**Table 3-1: US-AEP Presence**

Country	USAID Presence	Tech Rep Office	Other US-AEP-Funded Field Personnel
Hong Kong		✓	
India	✓ (Delhi)	✓ (Bombay)	
Indonesia	✓	✓	TAF field office, US-AEP Infrastructure Advisor, WEC office
South Korea		✓	TAF field office
Malaysia		✓	TAF field office
Philippines	✓	✓	TAF field office, ADB Tech Rep, BCN field office, USAID US-AEP regional coordinator since 9/94
Singapore		✓	
Sri Lanka	✓		TAF field office, PSC hired by USAID to manage training and TA
Taiwan		✓	
Thailand	✓	✓	WEC field office, TAF field office, infrastructure advisor hired by USAID to work at US-Thai Development Partnership

Each of the Technology Representative offices has been authorized by the DOC interagency agreement with USAID to hire three staff persons, generally two professionals and a secretary.

Summary highlights and conclusions follow this introductory section. Highlights present some of the significant results that have been accomplished from US-AEP activities to date and also include selected country-specific conclusions. This chapter's final section -- conclusions -- presents summary analysis based on assessment findings and lessons learned across countries.

### **A. Highlights of Evaluation Findings**

The highlights presented here portray US-AEP's significant on-the-ground accomplishments in Asia, as well as a few ongoing activities which look particularly promising. Analysis of U.S. trade generated, and the utility of specific training and fellowships, has been presented in the preceding chapter. Highlights are organized by country but not all countries visited by the assessment team are represented.

**Hong Kong:** US-AEP has shown that it can provide services to Hong Kong's public sector and is thus able to influence the country's environmental policies. For example, US-AEP introduced the US-based Electric Power Research Institute to Hong Kong as a source of information on electric vehicles, which was an area of interest to Hong Kong's Environmental Protection Department. The work of the Electric Power Research Institute was influential in the Hong Kong government's decision to waive a 120% new vehicle import tax on electric vehicles.

**India:** US-AEP and the USAID Mission have coordinated to support an ambitious Clean Coal Technology Program, which entered implementation in late summer of 1994. The program represents a major joint effort by the USAID mission, US-AEP and Indian counterparts in support of innovative technological approaches to pollution prevention.

**South Korea:** The work of the Technology Representatives has enabled the US-AEP office in South Korea to generate business prospects that may lead to substantial sales of U.S. environmental products and services. In fact, US-AEP/Korea has already been instrumental in helping a U.S. firm to be in a competitive position to win a large government contract (\$245 million) to build and manage a municipal wastewater treatment plant. This is but one of a dozen or more high-priority pending government contracts that US-AEP has targeted as an opportunity for increased U.S. involvement in South Korea's environmental infrastructure sector.

The South Korea program may prove informative for its success in tracking large infrastructure projects and helping U.S. firms to compete for such contracts. US-AEP-Korea's efforts to help U.S. firms compete for infrastructure projects could be studied to identify ways

that information can be tracked and put into a format that would be useful to TDA, EX-IM Bank and OPIC, in order to increase opportunities for their involvement. Opportunities for U.S. firms to participate in the development of environmental infrastructure projects seem particularly promising given that South Korea now appears interested in promoting BOT financing schemes.

The Technology Representatives efforts to use the media and various other "multiplier" fora seem to have been central to US-AEP's ability to make its presence known. Technology Representatives in other US-AEP countries might be encouraged to spend time "advertising" the project in order to create an environmental business network, as per the strategy followed by South Korea.

**The Philippines:** US-AEP has a niche in the Philippines within a strong U.S. environmental program. The ADB and DOC-managed technology cooperation efforts are components that add significant new services to USAID's extensive environmental portfolio. The US-AEP liaison in the ADB provides an important opportunity for U.S. firms to increase their involvement in the design, construction and management of environmental projects throughout Asia. The US-AEP's ADB liaison has been able to build on an active US&FCS presence and, in general, seems both well known and well regarded within the ADB. USAID has taken primary responsibility for all activities except for trade under US-AEP, for which the Technology Representative is responsible.

The USG environmental community in the Philippines meets monthly on an informal basis with all USG staff, contractors and PSCs involved in the environmental sector. The USG representatives at this meeting, chaired by the Director of USAID's Office of Natural Resources and Decentralization, include USAID project officers, the Senior Commercial Officer of US&FCS, the ADB liaison, the US-AEP/ADB liaison, a USIS representative and the Technology Representative. In addition, staff from a number of USAID-funded projects, TAF and the BCN representatives also attend. This body has no decision-making power rather its purpose is to share information and to allow for networking among the organizations as ideas develop. This coordination mechanism appears to be the most effective among countries having both a USAID mission and a Technology Representative office.

**Thailand:** In northeast Thailand (Mae Moh), US-AEP played a prominent role in helping to solve a major environmental problem. In this case, an EPA Action Team was brought in to analyze a major environmental problem (the release of too much sulfur dioxide into the atmosphere) at the request of the Thai government; USETI arranged for the Electrical Generation Authority of Thailand (EGAT) to receive training about technologies appropriate to address the problem; a U.S. firm sold products to the Thai government to solve the problem; and the USEPA continues to stay engaged with EGAT's Mae Moh operation through its development of a computer model designed to help manage electricity generation in a way that avoids a recurrence of the problem.

It seems reasonable to expect that the US-AEP Infrastructure Advisor placed at the US-Thai Development Partnership (Kenan Institute) will be in a position to achieve substantial success in improving municipal environmental conditions in Thailand. (The Infrastructure Advisor has been in place since July 1994.) The assessment team expects this effort to be successful because it has created a management structure that has a mandate to integrate US-AEP services into USAID/Thailand's ongoing infrastructure development activities, and because it is staffed by someone who has the knowledge and skills to include use of POD resources as part of the assistance strategy.

US-AEP achieved notable success in Thailand when a "bundle" of the project's resources were programmed in support of a specified Thai institution or environmental problem. The success of coordinating US-AEP's separate services seems to be dependent upon someone in-country having a full understanding of the range of US-AEP services available, knowing how to access those services, and placing some degree of priority on US-AEP's "development" mandate, an aspect of the project which has seldom been given prominence by the Technology Representatives. USAID has been able to coordinate US-AEP services in support of its own development agenda but, for various reasons, a synergy between the activities of the Technology Representatives and USAID has not been realized.

#### **B. Summary Conclusions from Country Analysis**

**US-AEP's services have been in high demand throughout Asia.** This has led to the establishment of a large number of linkages between the private sectors in the U.S. and Asia, and between the USEPA and Asia's public sector. From the field, the program appears to be genuinely demand-driven: a range of services are made available to Asian clients and programmed according to their selection and priorities, rather than decided upon by U.S. institutions.

**US-AEP has led to increased U.S. private sector involvement in Asia.** Overall, it is clear that US-AEP has established and overseen the development of a variety of project activities that have been successful at getting the U.S. private sector involved in addressing Asian environmental problems.

**The wide variety of US-AEP services has permitted the project to be a useful adjunct to all of USAID's bilateral environmental strategies in Asia.** USAID missions in the Philippines, Thailand, India, Nepal, Sri Lanka and Indonesia have environmental strategic objectives, and all of these missions have used the US-AEP program to enhance and expand their existing environmental portfolios. US-AEP provides a useful complement to USAID's ongoing environmental initiatives because of the wide variety of institutions and services to which it enables access.

**Use of POD resources is significantly higher in countries having a USAID mission, as compared with countries having only a Technology Representative office.** Of the ten countries visited by the assessment team, five had a USAID mission. However, nearly 80 percent of POD activities were undertaken in countries having a USAID presence. Although some POD activities have taken place in non-USAID countries, these activities have frequently been undertaken by TAF field offices or through the efforts of Washington-based implementors, such as USETI, who occasionally pass through the region.

The low utilization of POD activities by Technology Representatives has resulted principally because they have not interpreted their responsibility as being concerned with the primarily "development-oriented" services offered by POD implementors, and therefore have not made any serious effort to program such activities. In addition, USAID missions have been limited in their ability to access POD resources, because their existing staffs seem occupied with current duties to the extent that they have frequently been unable to allocate the necessary time to understanding and programming the array of US-based POD services. US-AEP's recent effort to consolidate several POD components into a single management structure will almost certainly help to address this problem.

**US-AEP is a timely effort that is correctly positioned to help U.S. firms to increase their involvement in the substantial and growing Asian environmental sector.** Asia's environmental market is increasing and the U.S. (along with Japan and several Western European nations) is seen as a principal source of relevant environmental technologies.

**In countries where there is both a USAID mission and a US-AEP Technology Representative office, the project's dual priorities of environmental technology transfer plus development are both active, but generally run in parallel with little or no coordination.** When USAID and the Technology Representatives are working in the same country, each tends to their own agenda, which is pursued fairly independently. They may coordinate some efforts, they may meet (or they may not), but in no case, did the assessment team find a coordinated program being pursued by the two entities that developed a synergistic relationship.

**In countries where USAID missions are not present, the US-AEP program is often perceived primarily as a U.S. environmental trade promotion project.** The Technology Representatives use US-AEP funding to augment the traditional USDOC mission of generating trade for U.S. firms, in this case environmental trade with Asian countries. However, the methods used by the Technology Representatives are highly technical, and are more directly responsive to Asian demands and the capabilities of particular U.S. firms than is generally the case with US&FCS trade promotion efforts. While the Technology Representatives have been an important contributor to US-AEP's technology transfer agenda, the project could benefit from additional attention being given to linking the Technology Representative's Asian business clients with the POD programs of TAF, WEC, EPA and USETI. In fact, although TAF and Technology Representatives are frequently resident in the

same countries, they seldom meet. All of these organizations have the ability to help interested Asians better identify and understand U.S. environmental technologies.

**The US-AEP Steering Committee, which was intended to be a coordinating mechanism for the various US-AEP implementors within a country, has largely proved to be less than effective.** The role of the steering committee is unclear, particularly as it relates to Asian representation. Furthermore, the committees don't control, or "steer", any significant resources. Attempting to have steering committees to "steer" US-AEP's in-country activities may have proved unsuccessful because the effort has run counter to US-AEP's demand-driven and decentralized programming. For example, when WEC, TAF or USETI undertake reconnaissance trips to identify program participants, they do not necessarily coordinate with the resident Technology Representative offices. In countries where US-AEP steering committees have met, the Asian government and private sector participants have questioned the committees' purpose and usefulness.

A viable alternative to the Steering Committee concept is found in the Philippines. There, the monthly coordination meetings, organized by USAID, have been useful for sharing information among the US-funded environmental community. Its only drawback is the lack of representation from host country institutions.

## **Chapter 4**

### **Overall Conclusions and Recommendations**

#### **A. Overview**

Asia's past decade of industrial growth has led to significant and widespread environmental damage but has also provided the region's economies with greater wealth. In turn, this increased wealth is permitting countries to increase their spending on a burgeoning range of environmental problems. In addition, rising levels of wealth throughout Asia are translating into a greater demand for improved environmental quality, especially as basic levels of food and housing security are being achieved.

#### **US-AEP is a timely program**

While traveling through the region, the assessment team was repeatedly told that Asia's environmental market is expanding and that the demand for U.S. environmental goods and services is increasing. The U.S. is increasingly seen as a principal source of relevant environmental technology (as are Japan and several Western European nations). The increasing demand for environmental technologies is due to the region's rapid economic expansion and because the governments are gradually tightening the enforcement of existing environmental regulations. In addition, significant opportunities for U.S. firms have been opened-up by the increasing prevalence of "build, operate, and transfer" schemes that permit private-sector capital to be used to fund large environmental infrastructure projects, such as municipal wastewater treatment plants. In short, the US-AEP is a timely program that is correctly positioned to help U.S. firms to increase their involvement in the substantial and growing Asian environmental marketplace.

#### **US-AEP's services are in high demand**

US-AEP's services have been in high demand throughout Asia; and the program has completed an impressive and broad array of activity. From the field, the program appears to be genuinely demand-driven: a range of services are made available to Asian clients and programmed according to their selection and priorities, rather than *a priori* decided upon by U.S. institutions. Environmental technology missions, fellowships and business exchanges are often custom-designed to fit the particular needs of individual Asian clients. This has led to the establishment of a large number of linkages between the private sectors in the U.S. and Asia, and between the USEPA and Asia's public sector.

The assessment team encountered ample anecdotal evidence of US-AEP's success in improving environmental quality in Asia and in increasing U.S. environmental trade to Asia. However, direct environmental quality improvements have been difficult to identify and monitor to date. In part, this is because systems to test and measure US-AEP's field efforts

are not yet fully operational, but also because environmental improvements are most frequently implemented between private sector actors and come to fruition only after US-AEP has ceased to be involved. Other measures that are being tracked by the program, however, indicate that hundreds of millions of dollars worth of U.S. environmental technology has been transferred to Asia as a result of US-AEP activities.

**US-AEP's demand driven strategy has led it to be perceived primarily as a technology transfer program that operates within the environmental sector**

US-AEP has completed an impressive array of activities, however, these activities have not generally been programmed against particular site-specific environmental problems or topic areas. Although the Partnership has almost certainly achieved a large number of firm-specific environmental improvements, it is unclear as to whether or not US-AEP has been able to substantially affect the usage level, direction, or quality of environmental technology application in Asia. The current design of US-AEP is most suited towards helping Asian businesses identify needed technologies (filling demand) rather than putting into place incentives that would influence a society's environmental technological directions or trends. Thus far, the Partnership's strength appears to have been in helping the U.S. gain a more prominent role in Asia's environmental marketplace.

US-AEP has thus far emphasized the creation of mechanisms to supply U.S. environmental technology to Asia, however, several of the Secretariat's recent initiatives are likely to provide the project a balance that gives greater attention to developing environmental policies, increasing regulatory enforcement, and building Asian environmental constituencies. These activities include integrating the USAID regional Environmental Improvement Project (EIP) into the US-AEP portfolio, and designing a new program component to address Policy, Participation and Public Awareness.

The program's strength in building environmental technology linkages between U.S. and Asian businesses is a direct reflection of the capabilities and mandates of the Partnership's implementing organizations. A majority of US-AEP's implementors -- including the DOC/US&FCS, OPIC, IFAS, ETNA, TDA, EX-IM Bank, BAFT, NASDA, USETI and perhaps WEC -- have as their primary constituents the U.S. private sector. The number of US-AEP organizations that are primarily concerned with specific environmental agendas include the USEPA, the BCN (World Resources Institute, World Wildlife Fund and the Nature Conservancy) and perhaps TAF. Due to the composition of the Partnership's implementing organizations, the program's primary operational emphasis has to date been the promotion of U.S. technology transfer and trade within the environmental sector.

## **US-AEP complements existing USAID bilateral environmental initiatives**

The wide variety of US-AEP services has permitted the program to be a useful adjunct to all of USAID's bilateral environmental strategies in Asia. USAID missions in the Philippines, Thailand, India, Nepal, Sri Lanka and Indonesia have environmental strategic objectives, and all of these missions have used the US-AEP program to enhance and expand their existing environmental portfolios. US-AEP provides a useful complement to USAID's ongoing environmental initiatives because of the wide variety of institutions and services to which it enables access.

## **US-AEP is well positioned to consolidate and build upon early success**

US-AEP's early programmatic flexibility has allowed it to try a number of new ideas. Without a strict agenda, and only the loose goals of increasing environmental trade and improving environmental quality in Asia, US-AEP was able to be creative in adapting its activities to the needs of each country. The program grew somewhat organically, with components being added, or new initiatives undertaken, as opportunities presented themselves. In a short time, the effort has grown significantly and has been able to bring together a number of USG agencies that normally do not work closely together, including the U.S. Environmental Protection Agency and the Department of Commerce. In addition, US-AEP has found ways to tie into programs run by the Asian Development Bank, the World Bank and a myriad of national-level public and private organizations throughout Asia. US-AEP is now arguably entering a consolidation phase, in which it can take stock of how well its components are interacting and what strategic, structural and operational adjustments can be made to increase the program's effectiveness.

The remainder of this section presents general conclusions and recommendations on the program's strategy, structure and operations. Detailed operational conclusions and recommendations are presented under section B. of this chapter.

### **1. US-AEP's Overall Strategy and Structure: Conclusion**

US-AEP has been designed to permit Asian clients to identify environmental priorities -- sometimes on a firm-specific basis, sometimes in response to government requests -- and then access U.S. technology and expertise to find solutions to those problems. Because US-AEP is a demand-driven effort, individual actions have demonstrated a high incidence of producing tangible results. However, also because of the US-AEP's demand-driven structure, site-specific environmental objectives have not been established, country strategies do not exist, and US-AEP has made little attempt to guide the selection and focus of activity. As the program is currently managed there are few, if any, explicit criteria which limit the range of activity in which the US-AEP is likely to become involved.

US-AEP was not designed as a "project" that set-out to achieve a predetermined set of development impacts, as is common to the design of traditional USAID projects. Instead, US-AEP has acknowledged that the nexus of economic development, the environment, and technology transfer through trade are critical issues vis-a-vis the United States and Asia; and then proceeded to make available to Asia an impressive array of U.S. public and private environmental expertise. US-AEP introduces and markets the expertise by brokering "partnerships" but then lets market forces take over. In addition to bringing together private sector actors, US-AEP also undertakes activities to help Asian governments develop improved environmental policies and regulations, albeit, so far, on an ad-hoc basis.

After two years of operation, certain implicit areas of emphasis have begun to emerge. In particular, the program has been most directly involved in problems related to industrial pollution and biodiversity (the latter because of a specific component dedicated to biodiversity activities). Were US-AEP to use more explicit guiding principles to help focus and monitor its activities, the assessment team feels that the criteria most in the spirit of US-AEP's implicit strategy have been (1) the importance of the problem to sustainable development in Asia, (2) the importance of the problem to the United States, (3) the suitability of the problem or issue to remediation through technology and market mechanisms, and (4) the comparative advantage of U.S. expertise and technology. These implicit criteria have provided US-AEP's management a screen for selecting among competing ideas, as well as being the foundation upon which its implementors have developed guidelines for approving specific actions and grants.

**Of activities undertaken to date, those associated with US-AEP's biodiversity component of US-AEP are most difficult to reconcile with US-AEP's overall strategy and most difficult to integrate with US-AEP's other activities.** While this evaluation has no conclusive position on how best to deal with this issue, it is a finding of this review that the current situation contributes to the general confusion about the mission and mandate of US-AEP.

**USAEP's Structure:** Directly related to the issue of the US-AEP's structure is the concept of "partnership" embodied in the program. US-AEP currently articulates its strategy in terms of partnerships at four different levels.

1. Partnerships between US-AEP and other U.S. Government Agencies involved in the U.S. Trade Promotion Coordinating Committee (TPCC)/US-AEP Working Group. The TPCC/Working Group is co-chaired by the Department of Commerce and USAID, and includes DOE, OPIC, U.S. TDA and the EX-IM Bank.
2. Partnerships between US-AEP and its Implementing Organizations. This group includes both governmental and non-governmental organizations, including USEPA, DOC/US&FCS, OPIC, TAF, WEC, USETI, and NASDA.

3. Partnerships between U.S. and Asian private sector firms, government institutions and NGOs. US-AEP considers this level of partnership to be the program's most important. US-AEP sponsors individual actions according to the likelihood of participants being able to develop linkages that will continue beyond the initial cost-shared actions supported by US-AEP.
4. Partnerships with Asian organizations and institutions that are likely to be able to influence the region's environmental policies.

To date, the US-AEP has developed working linkages with an impressive diversity of partners, and it is much to the credit of project leadership and staff that these relationships have been developed. The principal distinction between US-AEP's partnerships with its Implementing Organizations and more usual USAID projects is US-AEP's emphasis on always having implementors make a significant contribution to an activity's costs -- US-AEP is a "development cooperation" model of programming, as opposed to traditional development assistance projects.

The program's strongest "partnership" accomplishment to date has been its ability to broker new institutional linkages between U.S. and Asian entities, and particularly between U.S. and Asian businesses. The volume of technology transfer that has resulted from US-AEP activities attests to the success of this effort. The effort to form Asia-U.S. linkages is now coming into fruition and it may therefore be an appropriate time to revisit the issue of if and how to assess and monitor the formation of enduring market-based partnerships.

Concern, however, is sometimes expressed about US-AEP's relationships with U.S. government institutions, in part because at times they have been accompanied by territorial or bureaucratic contentions. Overall, it was the view of the assessment team that the quality of these partnerships has varied considerably and that there is evidence that some of these relationships are improving. However, US-AEP could benefit from additional attention being given to finding ways to meaningfully include its U.S. government collaborators in the project's governance (if the program is to remain a USG inter-agency initiative). To a large extent, the limited role to date of U.S. Government institutions (other than USAID) in the program's governance has been due to the virtual demise of the TPCC/US-AEP Working Group.

US-AEP is now beginning to conceptualize activities to increase the involvement of Asian institutions in the formulation of the program's operations. In particular, the newly opened Manila office is expected to play a key role in increasing US-AEP's cooperation with Asian institutions. Nevertheless, several of US-AEP's Implementing Organizations have developed close professional relationships with counterpart organizations throughout Asia. For example, the Industrial Estate Authority of Thailand's Environmental Enhancement Center has approached USETI to see if the two organizations can collaborate in establishing a regional environmental training center in Bangkok.

It is a conclusion of this exercise that the concept and nature of the partnerships between US-AEP and the U.S. Government, project implementing organizations and Asian institutions should be the subject of additional discussion.

## 2. US-AEP's Overall Strategy and Structure: Recommendations

**There is a widespread view, shared by the evaluation team, that US-AEP's image and effectiveness would benefit from additional clarity in its goals, objectives and strategy.** While almost certainly requiring some narrowing of the program's scope, effort should be made to do so in ways that do not unduly limit the program's current operational flexibility and entrepreneurial character.

The narrative content of the program's strategic objectives and program outcomes need to be reviewed for their realism and their congruence with current and expected activities. As currently written, these statements constitute categories for grouping activities rather than objectives per se. The current objectives also do not fully encompass important aspects of the program's implicit strategy. The nature of the linkages to be fostered, the direct results to be sought, the market issues and environmental problems to be addressed, and countries of emphasis are all potential issues for discussion and choice. Moving further into the performance measurement phase (identifying indicators, baselines and targets) should also help to tighten the strategy.

**US-AEP is now in a position to further sharpen its strategy and develop a project-wide impact reporting system.** Central to US-AEP's strategy is a strong reliance on market mechanisms to generate demand for, and sustain linkages between, the United States and the relatively developed countries of Asia. The endeavor is conceived as an interim measure to accelerate these actions and assist in the early introduction of U.S. environmental actors into the Asian marketplace. It appears to anticipate its own "sunset" at such time as these relationships are firmly established. In addition to the existence of an improved policy/regulatory framework, US-AEP's goals with regard to improving the functioning of the market for environmental improvement in Asia could plausibly be assessed in terms of three key indicators -- (1) overall growth in the market for environmentally-sound technologies, (2) investment in cleaner technologies, and (3) increased involvement by U.S. suppliers in Asia's environmental technology marketplace. These indicators are not at this time being tracked as medium-term performance measures for the project, but could presumably be should they be acknowledged as important goals.

**US-AEP's Structure:** A basic structural issue facing US-AEP is its relationship to USAID and the U.S. Government. In the view of the assessment team and many of those interviewed, the Partnership is at a cross-roads. Essentially, in the view of the assessment team, there are three options.

- First, USAID could choose to assert a relatively dominant role in which case US-AEP would more obviously cast itself as a USAID program with other U.S. government agencies serving as intermediaries rather than as program co-managers. This option

corresponds roughly to the status quo and would presumably oblige US-AEP to define its objectives in the context of USAID sustainable development objectives, or at least to more explicitly define the program's operational parameters.

Given the reluctance of USAID to enter into long-term commitments, this option would appear to imply a relatively short-lived (perhaps 10 years) plan for US-AEP to work itself out of a job by inducing a sufficient range of other USG, state and private entities into the Asian environmental marketplace to eliminate the rationale for the type of intermediation provided by US-AEP.

- A second option would be to resuscitate the inter-governmental governance structure that originally characterized the effort. To select this option would presumably have as one implication the projection of US-AEP as a USAID-led inter-governmental initiative addressing objectives and priorities, such as U.S. trade development, in addition to USAID's articulated sustainable development strategies.
- The third option would be to treat and eventually constitute US-AEP as an independent organization or foundation sponsored and financially supported (perhaps on a declining basis) by USAID. There are precedents for this approach which would presumably permit the organization and its board to articulate their own objectives, funding criteria and performance measures as a basis for discussion with USAID and other potential funding sources. This option would appear to be most consistent with maximizing US-AEP independence and flexibility, but raises obvious questions of organizational sustainability.

Regardless of which option is selected, US-AEP should strive to be more explicit in its presentation of the project's operating principles and parameters.

### 3. US-AEP's Operations: Conclusions

**US-AEP's implementors run well-managed and effective activities, however, overall program effectiveness could benefit from increased attention to building synergy between components.** Each of US-AEP's principal implementing organizations -- TAF, WEC, USETI, NASDA, USEPA and DOC/US&FCS -- has received high marks for their efforts and their abilities by Asian participants. The US-AEP Technology Representatives were seen in almost every case as being knowledgeable, personable, and ready and able to meet the needs of Asian businesses.

Individual US-AEP components, however, have frequently functioned as stand-alone activities which are not well-coordinated. The assessment team is of the view that the current division of labor among components is not necessarily optimal for effectiveness and efficiency in operations. In the field, the team observed considerable complementarity (much of it potential rather than realized) between POD and Technology Cooperation activities.

**US-AEP has led to increased U.S. private sector involvement in Asia.** To date, US-AEP's largest economic impacts have been measured from the NASDA Tech Fund program. The program's U.S. private sector clients are highly satisfied with the Tech Fund program and the program has recorded over \$300 million dollars in U.S. technology sales to Asia. And, as of October 1994, it was reported that the ETNA Trade Lead had resulted in nearly \$9 million in U.S. environmental technology sales to Asia.

The assessment team also heard from numerous Asian businesses who had purchased U.S. environmental technology as a result of contacts made through the programs of WEC and USETI. Overall, it is clear that US-AEP has established and overseen the development of a variety of activities that have been successful at increasing the U.S. private sector's involvement in the Asian environmental marketplace.

**Individual US-AEP activities have demonstrated the program's ability to improve environmental quality in Asia.** Many of the project's environmental impacts thus far have come from the POD activities. Virtually all participants in these activities were able to return to their home countries with new skills and abilities that they were able to apply to their jobs. Their positions in government, private business, or in NGOs have allowed them to make changes in policies and procedures, to introduce new technologies, and to raise awareness of certain environmental issues.

In addition to POD activities, US-AEP has also been able to affect Asia's environmental quality through technology transfer, usually through trade between individual U.S. and Asian firms. US-AEP's most well-known large-scale environmental impact came in Thailand through the intervention of an EPA action team, coupled with training and the sales of power plant scrubbers for the Mae Moh plant. Without US-AEP's intervention, the Thai government would not have been able to solve the problem as quickly as they did, and the negative health effects of the sulfur dioxide emissions would have continued for much longer.

The Mae Moh case, however, stands out as an exceptional accomplishment, more representative of the Partnership's potential than illustrative of its actual environmental accomplishments. More typical examples of US-AEP's environmental impacts are generally firm-level technology transfer sales from the U.S. to Asia. The extent of the Partnership's environmental impacts is difficult to assess since the project does not have an operational system to capture these results. An outstanding strategic issue is whether or not the project should measure its success based on environmental quality impacts.

Detailed operational conclusions and recommendations follow.

## **B. Detailed Operational Conclusions and Recommendations**

### **1. US-AEP Performance Monitoring: Conclusions**

**The program has done an outstanding job of collecting and tracking information concerning US-AEP's diverse set of actions.** A wealth of information is available concerning the number of US-AEP participants from any given country, which activity they participated in, and where they traveled. This activity monitoring system is an important and necessary step towards developing an information system that can be used to assess and improve the project's overall effectiveness.

**Among implementing organizations, NASDA has been the most effective at collecting performance information.** NASDA has gone the farthest towards setting up an information system to track and report on the economic impacts of its activities. NASDA routinely follows-up on the "downstream" activities of the U.S. private sector firms that participate in its program to determine if U.S. trade is resulting from the trade "partnerships" it has brokered. To date, NASDA has documented over \$300 million in U.S. environmental technology sales as a result of its first two years of operation.

**The project could benefit from having an information system to track whether private sector Asian clients are purchasing U.S. technology and expertise as a result of the trade lead system.** Although the Tech Reps have been urged to generate one trade lead per day there is not adequate attention being given to assessing the in-country trade impacts that are occurring as a result of the leads generated. A system to follow-up with Asian private sector clients could be useful for assessing the quality of U.S. responses and for quantifying the level of resulting trade (system effectiveness).

**The Department of Commerce considers the ETNA trade lead system to be one of the Department's best sources on the overseas demand for U.S. products.** The US-based ETNA trade lead system managers routinely compile and analyze information about which types of U.S. technologies are most requested by which Asian countries. This analysis has provided a useful gauge for analyzing product demand from Asia. In addition, the ETNA system has recently completed a survey of the U.S. private sector firms that receive trade lead information to determine the utility of the information and to gain insights into how the system can be improved. ETNA has recently improved its trade lead computer system to make it more accessible and versatile for use by overseas Technology Representatives.

**US-AEP has completed important steps in the development of a project-wide quality and impact management system.** That so much has been accomplished is surprising given that the first two years of the project have required that management's attention be focussed on project components and activities. In spite of this, significant accomplishments have been made in setting up a system to track project activities, and several early evaluation and quality exercises have led to noteworthy management improvements. Included in these actions has been the consolidation of POD management, a streamlined and more effective

trade lead system, and an improved system to manage NASDA overseas grant funds. The project is now in a position to expand its management information system to more comprehensively collect and analyze project-wide impact information.

## **2. US-AEP Performance Monitoring: Recommendations**

**Program implementors should be provided guidance in developing impact-level reporting systems.** Undoubtedly there needs to be further discussions to clarify the US-AEP's *overall* goals and operating parameters, however, it is clear that several of the program's principal implementors are in the business of generating increased U.S. environmental technology transfer with Asia. These organizations could now be encouraged to put into place information reporting systems to assess the impacts of their efforts. Impact information systems will be useful for the program in determining the effectiveness of its individual components as well as to identify areas in need of further improvement. As a start, the NASDA impact reporting system could be used as a basis for the Tech Reps, USETI and WEC to design similar systems.

**The Asia-based Tech Reps should be encouraged to begin collecting and analyzing information to determine if their Asian clients are receiving quality responses as a result of trade leads that are sent out to U.S. firms, to determine if trade is resulting, and to identify additional project services that could help Asian businesses better understand and identify U.S. environmental technologies.** Systematic follow-up could lead to a stronger client-service orientation on the part of Tech Reps. This could be expected to increase opportunities to link the Tech Reps' Asian business clients with the services of USETI, WEC, TAF or other project implementors.

## **3. US-AEP In-Country Coordination: Conclusions**

**In countries where there is both a USAID mission and a Tech Rep office, US-AEP's dual priorities of environmental trade and development are both active, but generally run in parallel with little or no coordination.** The assessment team is not aware of any country where a coordinated program was being pursued by USAID and the Tech Reps that developed a synergistic relationship between the two organizations. Specifically, an important chance for program synergy is being missed between the POD components and Technology Cooperation activities, e.g. Tech Reps and NASDA. Presently, most POD activities are administered and viewed separately from environmental technology transfer/trade development. The benefit of greater coordination would be increased opportunities to use fellowships, training and exchanges as ways for Tech Rep clients to learn more about U.S. environmental technologies. In addition, greater coordination would enable resources to be "concentrated" against significant environmental problems or institutions, thus increasing the project's prospects for achieving significant environmental impacts.

**In countries where USAID missions are not present, the US-AEP program is perceived primarily as U.S. technology transfer project. In large measure, this is due to the lack of utilization of POD activities by the Tech Rep offices.**

**Overseas, US-AEP is generally not perceived as being a cohesively managed program, particularly in countries where both USAID and Tech Reps are present (and especially in Thailand). There is no "US-AEP office" in countries where the program operates. Rather, the program consists of a collection of implementing organizations that are located in different places, are not well coordinated and, as often as not, are unaware of each other's capabilities. This has made the program difficult for U.S. and Asian clients to understand and access, and sometimes has projected an image of disarray.**

**The US-AEP Steering Committee, which was intended to be a coordinating mechanism for the various US-AEP implementors within a country, has largely proved to be less than effective. The reasons steering committees have been ineffective include: they have no authority to control or "steer" the numerous USAID-contracted U.S.-based organizations that operate in various US-AEP countries; the purpose of the committees has been unclear; and they do not control any resources and therefore do not have any clear program management responsibility. The steering committees have been run by the Tech Reps whose US-AEP role has been to generate environmental trade leads. This role has not given the Tech Reps a broad enough understanding of the overall program to act effectively as a US-AEP steering committee coordinator in countries where there is also a USAID mission.**

#### **4. US-AEP In-Country Coordination: Recommendations**

**POD activities hold a key to building synergy between US-AEP's trade and development activities (USAID), and between the project's various components. In order to increase the Tech Reps use of fellowships, training and business exchanges it may be necessary to explicitly include the programming of POD activity as a job responsibility of the Tech Reps, and to hire someone to act a POD coordinator (at least in priority countries). In countries where USAID operates, the POD coordinator could be charged with working with both USAID staff and Tech Reps, and would be responsible for identifying opportunities to use POD activities to build synergy between Tech Rep and USAID initiatives.**

**If the POD manager were resident in a Tech Rep office this could go along way toward helping to develop a "one-stop" U.S. environmental office, and perhaps would provide US-AEP an improved and more coherent program image. This would result because there would be someone in the Tech Rep office that could speak to the range of available US-AEP services.**

**US-AEP needs to revisit the steering committee concept as currently managed and conceptualized.** The assessment team feels that there are two options for how to proceed.

- The first option would be to eliminate and not replace the steering committees. If this option were chosen there would be little, if any, noticeable change in program coordination within the main US-AEP countries of operation. This option may be most relevant in countries where USAID does not operate.
- The second and perhaps more useful option would be to abandon the steering committee concept in favor of a coordination meeting concept. Under such a scenario the steering committees would not have authority to direct resources or programs. The purpose of the meeting would be to share information among those within a country responsible for managing environmental programs. The meetings would serve to keep the key players informed of each other's activities and could lead to greater synergy and coordination among U.S. government agencies and projects.

#### **5. Professional and Organizational Development Resources: Conclusions**

**Impact from POD activities can already be seen in Asia, although it is not being measured well.** Training and internships has provided needed skills, both technical and managerial to the participants, skills that they have been able to apply on the job upon their return. In addition, the knowledge gained from the program has resulted in the development of new policies and legislation, new regulations and new programs, all benefiting the environment. Finally, POD activities have resulted in trade between the U.S. and Asia, particularly as a result of the WEC and USETI programs. However, while the implementors are doing a good job of tracking activities, impact data is not being routinely collected at the present time.

**POD activities have been carried out in a timely and professional manner and are well regarded by the participants.** Virtually all participants that were interviewed were uniform in their praise for the professional manner in which the training and internships were carried out. Both the logistics and the types of activities engaged in were of high quality.

**POD offers a diverse menu of activities to promote training and technology familiarization.** The internships, training courses and business exchanges offer a broad means to attempt to deal with the needs of Asians in the environmental sector. The program has been flexible enough to provide for the diverse needs of individual participants in a manner that each participant has felt well served by the experience.

**The demand for POD activities remains high.** The demand for POD activities is only limited by the funds available. The desire for training and internships to the U.S. is high, due to the leadership role that the U.S. has played in the environmental field.

**Use of POD resources is significantly higher in countries having a USAID mission, as compared with countries having only a Tech Rep office.** The principal reasons for this are twofold: Tech Reps do not have any professional incentive or mandate to program POD activities; and Tech Reps do not seem familiar with the range of US-AEP implementing organizations or the processes by which their services can be accessed.

**The lessons learned by US-AEP in the POD component have appropriately shaped its reorganization.** While the POD activities over the first two years have been quite successful, US-AEP has identified a series of lessons learned that it has used to consolidate the management of the POD component. This new structure will increase the efficiency of the component's management and will make it easier for USAID missions to access POD services.

#### **6. Professional and Organizational Development Resources: Recommendations**

The FOD component is well managed and effective -- the assessment team has no recommendations concerning the structure or management of this component.

#### **7. The Biodiversity Conservation Network: Conclusions**

**BCN is principally a research program, albeit one that attempts to integrate biological, socioeconomic and enterprise interests.** The BCN agenda is not a general support program for biodiversity but a research program that has been designed to test the hypothesis linking enterprise development and conservation practices. This multi-faceted program requires that participating NGOs propose and implement complicated programs of action research.

**The grantmaking process was slower than expected because NGOs had difficulty understanding and meeting the BCN's research agenda.** Many NGOs thought that BCN was a general support program to which they could apply for grants. Due to lack of outreach on the part of BCN during its initial stages of promotion, many NGOs misunderstood the purpose of the program and applied with proposals that did not satisfy BCN's basic requirements. Lack of planned technical assistance to NGOs in this beginning stage further delayed the preliminary grantmaking cycle.

**BCN has not been well integrated into US-AEP.** BCN acts as a stand-alone component of US-AEP. It does not interact with the other components, although it could benefit from closer ties with the POD component. Its program management, until recently, has been separate from US-AEP and USAID's role in the management of BCN has historically been limited. The results and impacts of BCN, as the project is currently structured, are likely to have little impact on the direction of US-AEP, despite BCN's criteria for including enterprise potential as one of its criteria for approving NGO grants.

## **8. The Biodiversity Conservation Network: Recommendations**

BCN's status as a fairly independent project within US-AEP leaves the evaluation team with the following options in regard to the BCN program:

- **Divest BCN from US-AEP and allow it to continue as a stand alone project.** This option recognizes the existing separation of interests and management structure that already exists between US-AEP and BCN. By removing one component from US-AEP, both the structure of US-AEP and its strategy would be clarified and narrowed. Separation of the two projects would also allow each project to concentrate on doing what it does best.
- **Continue the program structure as it already exists.** BCN's independent status within US-AEP has not caused any significant problems. And while BCN is unlikely to become meaningfully integrated into the partnership, if the current status is working, there is no compelling reason why the relationship must be changed. By leaving the BCN in US-AEP, US-AEP retains the mantle of a comprehensive, multi-sectoral environmental project. It also leaves the door open for some future interaction between BCN and other components, such as POD.
- **Restructure BCN to increase its complementarity with the US-AEP project.** If the BCN component were redesigned to give increased attention to promoting market-based solutions to biodiversity, and were the component to give technology commercialization precedence over general research, then it is possible that the BCN project could make a more significant contribution to US-AEP's overall strategy than if BCN continues as currently operated.

## **9. Technology Cooperation: Conclusions**

**The NASDA Program is having great success in generating environmental trade with Asia.** By any standard, the NASDA program has generated enormous volumes of trade. NASDA is providing the right type of service for U.S. businesses and has been able to flexibly respond when issues arise. Part of the success of the program must be shared with the Tech Reps who provide key linkages with Asian firms.

**The Technical Cooperation component is a highly visible, often times the only visible US-AEP component in some countries.** US-AEP's name is most associated with the offices of the Tech Reps in Asia. The Tech Reps are a very visible part of the project in the public's eye. In countries without USAID missions the Tech Reps essentially are the US-AEP program.

**The Technology Cooperation component provides an important on-the-ground presence for the promotion of U.S. environmental trade.** This component provides an excellent means to focus on U.S. to Asia environmental trade in technology and services. The specific mandate of the Tech Reps, whether or not they are in the same office as the rest of US&FCS, means that the environment is getting special and expert attention in U.S. trade promotion efforts. The Tech Rep offices are becoming well-known in the environmental community of public and private sector organizations. The Tech Rep offices also provide a potential one-stop shop for U.S. and Asian firms who are investigating environmental business opportunities in Asia.

**The performance of the trade lead system has been carefully monitored by the US-AEP Secretariat, a series of improved practices have been introduced, and the system appears to be coming into fruition in terms of generating U.S. environmental technology transfer and trade with Asia.** A new trade information system, such as CTIS, requires time to design, implement and perfect. A number of recent improvement processes have been introduced based on analysis of the system's operations to date. Management adjustments have made the system easier for Tech Reps to use and have dramatically increased the number of U.S. firms involved in the ETNA information network (now up to around 3,000 U.S. companies). As initial design and operational challenges have been overcome, the Secretariat's focus has shifted to improving the quality of the leads being entered into the system. In addition, the US-AEP Secretariat is currently devising a trade lead quality incentive rating system that will financially reward Tech Reps based on their ability to produce a sufficient quantity of high quality trade leads.

There remains, however, an issue concerning the validity of how the value of U.S. trade resulting from trade leads is calculated and a question as to what degree Asian firms have found the system useful for identifying and sourcing U.S. environmental technologies. These issues could be given further attention over the coming months.

## **10. Technology Cooperation: Recommendations**

**Conduct an analysis of the effectiveness of the trade lead system that is focussed on Asian clients.** A recent client survey conducted by ETNA indicated that 64% percent of U.S. firms responding to the survey rated the quality of ETNA trade leads as being very good to excellent (another 20% rated the quality of leads to be good). Although this is convincing evidence of the value of the system to U.S. firms, an effort should be made to routinely follow-up with Asian businesses that are the source of the trade leads. This follow-up exercise could help to determine the effectiveness of the trade system, e.g., did the Asian firms receive useful information from U.S. companies, and the information could be used to link Asian clients looking to source U.S. environmental technology with the services of USETI, WEC and NASDA.

**Provide feedback on sales and linkages to the Tech Reps.** This type of feedback will assist the Tech Reps in knowing which part of the environmental sector is most active and which businesses with which they are working have been the most successful.

**Make it easier for small- and medium-sized U.S. environmental firms to develop partnerships in Asia.** These firms are the ones least able to afford the high costs of investigating the Asian market and developing relationships with Asian counterparts. Support for U.S. firms to temporarily set-up shop in Asia, perhaps for periods of one to two months at a time, could enable small and medium sized firms to maintain the presence that is necessary for long term deals to happen. Asian firms welcomed this idea as a low-cost means for them to get to know potential counterparts while acquainting them with the needs of the local marketplace. This service, or something similar, may already be possible to offer through US&FCS' "Green Key" program. If so, its availability could be broadcast through the WEC, USETI and NASDA networks.<sup>1</sup>

## **11. Environment and Energy Infrastructure: Conclusions**

**There is a large and growing environmental infrastructure market in Asia.** A decade of tremendous industrial and urban growth across most of Asia has left the region's countries with a growing demand for environmental infrastructure services, many of which are beyond the abilities of governments to fund. Increasingly, the region's governments are turning to innovative methods for leveraging private sector financing to meet their infrastructure needs. Thailand's requirement that new high-rise buildings and hotels build their own wastewater treatment facilities is one example of attempts to shift infrastructure costs to the private sector. Build, Operate and Transfer (BOTs) financing schemes have also gained increased popularity throughout the region (including the Philippines, Indonesia, South Korea, China, Sri Lanka and Thailand), and present significant opportunities for international firms to compete in joint ventures to design, construct and or operate large infrastructure projects. US-AEP could help to position U.S. firms to compete for these projects by making information available in a consistent format to its US-based financial partners, including TDA, EX-IM Bank and OPIC, and, possibly, by distributing the information through its trade lead system.

**US-AEP funding, through its partnership with TDA, has been used to help U.S. firms win large contracts in Malaysia and Singapore.** In addition, the work of the infrastructure advisors in Jakarta and Bangkok looks exceptionally promising, as does the work of the Tech Reps in South Korea. In fact, in South Korea the Tech Reps have successfully accessed TDA resources to enable a U.S. firm to be in a competitive position in a bid to design, build and

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<sup>1</sup> The Green Key service is an adaptation of the Gold Key service that US&FCS offices worldwide have been offering for the past several years. For a modest fee, US&FCS will provide the following services for US business persons exploring market opportunities overseas: provide market orientation briefings, provide an interpreter for meetings, and arrange a schedule of meetings with key informants and potential business partners.

operate a \$245 million wastewater treatment plant. Although TDA is no longer receiving US-AEP funding, they have continued to cooperate with the US-AEP project.

**Early identification of infrastructure projects can lead to opportunities for U.S. businesses to market their technologies to Asian decision-makers.** However, there is currently no process for linking POD activities with upcoming environmental infrastructure projects. The assessment team is aware of two cases where POD activities have led to U.S. businesses being able to market technologies as a result of contacts made through POD activities. One example is that of a South Korean Municipal official participating in a WEC exchange. This South Korean official visited a wastewater treatment facility in Virginia that is managed by a firm now competing to build a similar facility in Pusan, South Korea. A second example is that of Thai officials participating in a USETI-sponsored workshop in New Jersey. The workshop was conducted by a company that was later able to sell air scrubbers to Thailand's Electricity Generating Authority, the same agency that participated in the USETI-sponsored workshop.

**The EEI component appears to be comprehensive, although as yet is largely untested. This component attempts to cover the basic needs for the support of U.S. firms into large energy/environment infrastructure projects in Asia.** However, many services have not been utilized to any great degree, and this seems particularly true for IFAS, OPIC and BAFT. There are three possible reasons for this. The first is that this component is the newest and is just getting off the ground. The second is that the Tech Reps in the field are not sufficiently connected in most countries, South Korea excepted, to assist U.S. firms to bid on or enter into these projects. The final reason may be that larger multi-national firms do not need US-AEP to broker their way into existing U.S. government programs, such as TDA, OPIC and EX-IM Bank, or, in fact, may not need U.S. government assistance to penetrate Asia's environmental marketplace.

## **12. Environment and Energy Infrastructure: Recommendations**

**Together with the EX-IM bank, TDA and OPIC, US-AEP should devise a simple project-alert reporting system that could be used by Tech Reps and Infrastructure Advisors to capture and distribute information concerning upcoming environmental infrastructure projects.** Although the Tech Reps in South Korea have been tracking several large upcoming projects, there is currently no system to distribute this information to U.S. businesses or other US-AEP implementors. Early identification of such projects could enable US-AEP implementors, such as USETI and WEC, to provide services that could help to familiarize Asian decision-makers with relevant U.S. technologies.

**Since US-AEP is a demand-driven program, management should review the programs of their implementing partners who have yet to generate significant demand for their services.** US-AEP designed and made available a wide range of services on the assumption that demand existed and this assumption now needs to be revisited. It is possible that such services are well managed but still may not be adding much of value to the overall US-AEP program.

**Annex A**

**US-AEP Objective Tree  
and Performance Indicators**

1.5

Figure 1-1

## Objective Tree for US-AEP

### GOAL:

**GOAL**  
To foster solutions to Asia's environmental problems using US experience, technology, and practices.

### STRATEGIC OBJECTIVES:

**1.0** Increase the transfer of environmental experience, technology, and practices from the US to targeted Asian countries.

**2.0** Improve the mechanisms by which US and Asian governments, NGOs, and private sectors marshal and combine their resources to address Asian environmental requirements.

### PROGRAM OUTCOMES:

**1.1** Partnering of NGOs, governments, and businesses in areas related to environmental quality increased.

**1.2** Awareness of Asian industries, enterprises, utilities, and governments increased as to relevant US environmental experience, technology, and practices.

**1.3** Awareness of opportunities in Asian environmental sector by US firms increased.

**1.4** Access to improved mechanisms for financing the purchase of US environmental experience, technology, and practices by Asian buyers improved.

**2.1** New cooperative initiatives developed related to Asia's environmental sector.

**2.2** Awareness, understanding, and application of the tool available through the AEP by US and Asia governments, NGOs, the private sectors and MDBs improved.

**1.2.1** Increased number of Asians demonstrating awareness of US environmental experience, technology, and practices.

**1.2.2** US technology and practices promoted and demonstrated to Asians.

**1.3.1** Increased number of Americans demonstrating awareness of Asia's environmental sector.

**1.3.2** Mechanisms for communicating Asian requirements for environmental experience, technology, and practices to US companies improved.

**2.1.1** Government initiatives.  
**2.1.2** Private Sector initiatives.  
**2.1.3** NGO initiatives

**Figure 1-1 (continued)**

**Strategic Information and Indicators**

**1.0 STRATEGIC OBJECTIVE**

Increase the transfer of environmental experience, technology, and practices from the US to targeted Asian countries.

- A. US environmental technology or practice adopted within affected company, enterprise, utility, or government agency.
- B. Number of joint ventures/investments between US and Asian businesses.
- C. Number of licenses/distributorship established between US and Asian businesses.
- D. Dollars in sales/contracts by firms receiving assistance from US-AEP.

**1.1 PROGRAM OUTCOME**

Partnering of NGOs, governments, and businesses in areas related to environmental quality increased.

- A. Number of partnerships by type (e.g., Asian or US business, government, or NGO.)
- B. Type of partnership.

**1.2 PROGRAM OUTCOME**

Awareness of Asian industries, enterprises, utilities, and governments increased as to relevant US environmental experience, technology, and practices.

- A. Number of Asians requesting information on US environmental experience, technology, or practices.
  - B. Number of Asians participating in US-AEP activities.
- 1.2.1 Increased number of Asians demonstrating awareness of US environmental experience, technology, and practices.
- A. Percent of Asians involved in US-AEP activities demonstrating an improved awareness of US environmental experience, technology, and practices.
- 1.2.2 US technology and practices promoted and demonstrated to Asians.

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**Figure 1-1 (continued)**

- A. Number of US environmental firms pursuing opportunities in Asian market.

**1.3 PROGRAM OUTCOME**

Awareness of opportunities in Asian environmental sector by US firms increased.

- A. Number of Americans requesting information on opportunities in Asia's environmental sector.

- B. Number of individuals participating in US-AEP activities.

1.3.1 Increased number of Americans demonstrating awareness of Asia's environmental sector.

- A. Percent of Americans involved in US-AEP activities demonstrating an improved awareness of Asia's environmental sector.

1.3.2 Mechanisms for communicating Asian requirements for environmental experience, technology, and practices to US companies improved.

- A. Number of US organizations requesting information on Asia's environmental sector.

**1.4 PROGRAM OUTCOME**

Access to improved mechanisms for financing the purchase of US environmental experience, technology, and practices by Asian buyers improved.

- A. Availability of financing for sales of US environmental goods and services.

- B. Number of small/medium size US environmental companies receiving financing for Asian trade or investment.

- C. Number of large companies (>\$500 million revenues) receiving financing for Asian trade or investment.

**2.0 STRATEGIC OBJECTIVE**

Improve the mechanisms by which US and Asian governments, NGOs, and private sectors marshal and combine their resources to address Asian environmental requirements.

- A. Amount of State funds leveraged through partnership with US-AEP.

- B. Amount of Federal funds leveraged through partnership with US-AEP.

**Figure 1-1 (continued)**

C. Amount of private sector funds leveraged through partnerships with US-AEP.

**2.1 PROGRAM OUTCOME**

New cooperative initiatives developed related to Asia's environmental sector.

2.1.1 Government initiatives

A. Number of Federal Government organizations making a substantial contribution of time, expertise, in-kind, or cash resources or general support to an identified project.

B. Number of State organizations making a substantial contribution of time, expertise, in-kind, or cash resources or general support to an identified project.

2.1.2 Private Sector Initiatives

A. Number of private sector organizations making a substantial contribution of time, expertise, in-kind, or cash resources or general support to an identified project.

2.1.3 NGO Initiatives

A. Number of NGO organizations making a substantial contribution of time, expertise, in-kind, or cash resources or general support to an identified project.

**2.2 PROGRAM OUTCOME**

Awareness, understanding, and application of the tools available through the US-AEP by US and Asian governments, NGOs, and the private sectors and MDBs improved.

A. Number of conferences and trade events where US-AEP and TR&D staff discussed activities and opportunities related to Asia's environmental sector.

B. Number of articles/publications where US-AEP contributed to the discussion of activities and opportunities related to Asia's environmental sector.

C. Number of organizations utilizing US-AEP sponsored mechanisms by type (e.g., Asian or US businesses, government, or NGO)

**Figure 1-1 (continued)**

- D. Number of organizations utilizing US-AEP sponsored information via electronic communications by type (e.g., Asian or US businesses, government, or NGO)
- E. Type of information electronically available to US and Asian businesses, NGOs, governments, and others concerning US government and other efforts related to Asia's environmental sector.
- F. Percent of organizations contacted demonstrating an improved understanding of Asian activities/opportunities as a result of the US-AEP.

## **Annex B**

### **Country Summary Highlights**

## **Annex B: Highlights from Country Studies**

### **Country Summary - Hong Kong**

Hong Kong's economy is a peculiar mix of no-holds-barred free enterprise, statist firms, and marriages of convenience. There are many actors in the environmental sector of the Hong Kong political and economic landscape, and they appear to welcome the entrance of US-AEP firms to the mix. US-AEP's market-entry timing is well placed, because it seems likely that British firms will lose their dominance of the market in the "post-colonial" period.

Hong Kong is scheduled to become a Special Administrative Region of China in 1997. Currently, it serves as the physical and financial gateway to bustling Guangdong Province, a special economic zone which, in turn, serves as a marketplace for heavy industry based in Jiangxi Province. Commerce between Taiwan and Fujian Province is also routed through Hong Kong.

US-AEP in Hong Kong is centered entirely in the Tech Rep office. As no other components or implementing organizations have offices in Hong Kong, the US-AEP office, which is closely connected to the US&FCS office, is responsible for all activities. For this reason, the Technology Cooperation activities receive the most focus. In addition to the trade lead function and coordinating NASDA trade missions, the Tech Rep office has also produced six International Market Insight reports (IMIs) and one Industry Subsector Analysis (ISA). A US-AEP Steering Committee includes representatives from industry, NGOs, government, and the press and is chaired by the Deputy Principal Officer, American Consul General.

In terms of POD activities, there have been six TAF Fellowships, one WEC business exchange and five participants trained in USETI courses. In addition, Hong Kong will be the first country in Asia to receive four USEPA short-term training modules.

### **US-AEP Highlights**

AEP has shown that it can provide services to Hong Kong's public sector which are able to influence the country's environmental policies. For example, US-AEP introduced the US-based Electric Power Research Institute to Hong Kong as a source of information on electric vehicles, which has been promoted by Hong Kong's Environmental Protection Department and have been accepted as one of Hong Kong's future clean air strategies. As a result, the Hong Kong government will waive a 120% new vehicle import tax on electric vehicles. The work of the Electric Power Research institute was influential in the decision to promote electric vehicles in Hong Kong.

## **Principal Conclusions and Recommendations**

- The Tech Rep has developed a wide-ranging, impressive network spanning both the public and private sectors in Hong Kong. Networking is an important aspect of doing business in Hong Kong and appears to be an effective means of gathering market intelligence. It also provides a means of identifying Professional and Organization Development (POD) nominees and sponsors. The Tech Reps do not have any incentive to program POD activities because their performance is assessed by AEP solely according to the number of trade leads they generate.
- The Tech Rep has delegated the trade leads function to interns. Some of the trade leads have been followed up on by US firms, although the Tech Rep and the US&FCS officer expressed doubts about the usefulness of the system. There is no indication that trade leads have generated business for US firms, in addition, no one has examined the usefulness of the system for Hong Kong businesses. In fact, several Hong Kong firms that were looking to the trade lead system as a way to source US products expressed annoyance at follow-up calls which were unrelated to the technology they were attempting to source.
- The US-AEP Steering Committee has focused most of its attention on the program's operational details, including making recommendations for participants in POD activities. As a result, participation on the committee has been increasingly delegated to subordinates.

## **Lessons Learned**

It is not apparent that Tech Reps have any incentive to program POD activities, even though some POD activities have been programmed in Hong Kong, clearly they have not been given much priority. This is because the Tech Reps are managed by US&FCS, and US&FCS seems to be exclusively concerned with generating business for US firms. In countries with no USAID presence, US-AEP doesn't appear to be anything other than a US government-sponsored trade promotion program. The program's only on-the-ground presence in Hong Kong is US&FCS/Tech Reps, and their focus is clearly on promotion of US trade. Managers of POD activities occasionally visit the country to promote their programs, such as USETI and TAF, however, because such visits are infrequent, they don't really contribute much to US-AEP's in-country image.

## Country Summary - India

India is clearly a locus of both daunting challenges and compelling opportunities for environmental improvements. With a population of approximately 900 million and GNP per capita of \$310, it ranks as the largest low-income economy in the world outside of China. Poverty is widespread and apparent to any visitor; at the same time, India holds huge economic resources and potential. The average annual rate of growth in GNP per capita from 1980 to 1992 was 3.1 percent. This average is higher than most low-income countries, and higher than that of some wealthier countries as well (The US average rate for the same period, for example, was 1.7 percent). The US Department of Commerce has recently recognized the dynamism of the Indian economy by categorizing it as one of only a few major emerging markets in Asia. India has experienced considerable liberalization of its economy in recent years, including privatization of many publicly owned firms and loosening of trade barriers. These developments, combined with expanding public awareness of environmental concerns and some tightening of official environmental standards, together have encouraged a large and growing market in India for new environmental technologies and services. More than 200 companies are present in the country, just in the pollution control equipment manufacturing sector. Such companies tend to have a solid engineering base among their own staff, and often are looking for innovative technologies to meet substantial, pressing needs.

While New Delhi is the capital of India's federated political system, Bombay may be considered the country's commercial capital. Similarly, professional and organizational development activities of US-AEP in India are coordinated through the USAID Mission in New Delhi, but environmental business activities are carried out through the US&FCS office in Bombay. Some of the POD activities, such as Asia Foundation Fellowships, had been assisted by the Mission even previous to establishment of US-AEP. On the other hand, the focused environmental business promotion effort in Bombay is newer, having commenced under US-AEP auspices in July of 1993.

### US-AEP Highlights

- India is a leading country for the World Environment Center's Environmental Business Exchanges. EBEs between India and the US totalled 58 as of May 15, 1994; 39 (67%) of these were India-to-US, while 19 (33%) were US-to-India. Exchanges appear to have been well designed and executed, and the Indian exchangees in particular are often aggressively looking for US-based technologies to apply to environmental problems throughout India. At least one trade agreement has been signed in follow-up to an exchange, and several more are in progress.
- US-AEP and the USAID Mission have coordinated to support an ambitious Clean Coal Technology Program, which entered implementation in late summer of 1994. The

program represents a major joint effort by USAID and Indian counterparts in support of innovative technological approaches to pollution prevention.

### **Principal Conclusions and Recommendations**

- Aside from information sharing and occasional collaboration, US-AEP functions are split between the technology cooperation focus in Bombay and the coordination of all Partnership activities in New Delhi.
- The Tech Rep office is closely coordinated and supervised by the US&FCS office, and is guided by a set of objectives supported by US&FCS.
- Together with USAID, the Embassy and other USG environmentally focused groups, US-AEP should participate in and support development of a country strategy for US-AEP in India. Such a strategy should identify country-specific operating objectives, recognizing US-AEP/India's strengths in some areas and opportunities for further improvement in others.
- US-AEP should provide feedback to the Bombay advisory panel on progress of program activities, along with follow-up information on action taken in response to panel suggestions, thereby closing the loop with panel members and ensuring that the time they contribute to the panel is of maximum value.

### **Lessons Learned**

- US&FCS can be very supportive of the technology cooperation function, as displayed in Bombay. A complementarity of interests between US-AEP and US&FCS, combined with a high level of local demand for Tech Rep services and appropriate support to the Tech Rep from the US-AEP technical services contractor in Washington, appear to contribute to this harmonious relationship.
- Overall country-level US-AEP response to opportunities for environmental knowledge-sharing and trade development could be improved by enhanced collaboration between the teams in Bombay and New Delhi. Since these two groups tend to specialize in different component areas, stimulation is required from Washington for such an improvement to take place.

## Country Summary - Indonesia

Although the past few years have witnessed enormous growth and economic liberalization, Indonesia still faces overwhelming problems as a result of its size, geographical makeup, diverse ethnic composition, and speed of its recent economic success. Indonesia's most pressing environmental issues include: water availability and quality; industrial waste pollution control; environmental impact assessment; institutional strengthening and law enforcement; hazardous waste management program; and, urban environment. Huge primeval hardwood rain forests are disappearing in Indonesia at the rate of one million hectares a years.

USAID has developed a strategic plan to assist Indonesia from regional U.S. Government environmental programs. The formal document outlining the plan lists six key areas USAID has determined for its environmental program: Biodiversity Conservation; Tropical Forestry; Sustainable Agriculture; Industrial Pollution Reduction; Urban Environmental Infrastructure; and, Environmental Technology Trade. Within each program area, an objective is stated, management (a project officer) and coordination are defined, sources of support are identified, and priorities are established.

The USAID Office of Agro-Enterprise and Environment is the primary office for management of USAID program assistance to Indonesia in the agriculture and environmental sectors. This Office provides coordination and management of bilateral projects and regional programs. US-AEP is one of a number of programs available to USAID, and managed by the Office of Agro-Enterprise and Environment. Its parts are distributed across the key program areas as follows:

USAID Program Area	US-AEP Function
Natural Resource Management Network	Biodiversity Conservation
Industrial Pollution Reduction	Professional and Organizational Development
Environmental Technology Trade	Technology Cooperation
Urban Environmental Infrastructure	Energy and Environmental Infrastructure

An Environment Working Group was established two years ago (concurrent with the introduction of US-AEP) to discuss environmental concerns in the Mission, and to work out the overlap of various programs. Mandated by the Ambassador, this group deals with the entire breadth of bilateral projects and regional programs; it serves as the US-AEP Advisory Committee. The Strategic Plan is one of this group's primary outputs.

Those activities centered around Technology Cooperation are coordinated by the US-AEP Business Representative, in Jakarta. The Infrastructure representative -- although reporting functionally to USAID/Indonesia via a cooperative agreement with the Regional Housing and Urban Development Office (RHUDO) -- is collocated within the same set of offices with the

**Business Representative.** The business and infrastructure representatives do attend the Working Group meetings.

The business representative regularly attends the Commercial Action Team (CAT) meeting. The Commercial Action Team was formed as a means for agencies within the Embassy discuss ways to promote U.S. businesses in Indonesia. The weekly meeting, chaired by either the Ambassador or the Deputy Chief of Mission, is where commercial information sharing and decisions are made, and where this segment of US-AEP activities receives attention, recognition, and visibility.

### **Principal Conclusions and Recommendations**

- USAID/Indonesia has successfully adapted US-AEP to complement and support its existing environmental strategy and framework, as one of a set of bilateral projects and regional programs.
- There is a consistent level of activity in the Professional and Organizational Development (POD) area, with the highest number of participants attending USETI courses. Overall, the POD activities have experienced very few problems; participants and coordinators state these activities generally run very smoothly.
- Both the business and infrastructure representatives have attained a high level of visibility and success from their efforts. Being in operation only since December 1993, these co-located offices have quickly become recognized as an environmental information center and a place for business contacts. Relating to these offices, US-AEP is viewed as the first time a government agency is outwardly willing to work with the private sector.
- US-AEP Indonesia is viewed as a three-part structure, as a result of the division of its resources and responsibilities: USAID, USAID/RHUDO, and US&FCS.
- US-AEP should reexamine the trade lead quota as it now exists for Indonesia, determining specific quality control, quota requirements, and alternate indicators of success for the business representative and the staff. Concurrently, the Secretariat should encourage US&FCS to work with the business representative on alternate means to bring U.S. businesses to Indonesia.

## Country Summary - Korea

South Korea, while it adheres to the basic tenets of private enterprise, also has a highly visible policy of government intervention through formulating detailed economic development plans and by exercising direct or indirect ownership and control of enterprise and financial institutions. Its rapid economic expansion began in 1963 when it abandoned an import substitution policy and economic growth began to be driven by a rapid and sustained expansion in exports. The US is Korea's leading trading partner, with Japan a distant second. South Korea's GNP grew rapidly during 6 successive 5-year plans, with an average annual growth rate of 9.9% during 1982-91, and a 1992 per capita GNP of US\$ 6,749.

Eschewing foreign investment, South Korea has pursued a strategy of borrowing capital and buying technology. As a result, by 1986, Korea had accumulated a foreign debt equivalent to 47.2% of its GNP. Although this was reduced to 12.9% by 1990, and growing foreign assets have further reduced net foreign debt, Korea still regards the size of the foreign debt to be a chronic problem. In this context, in July 1994 the Korean government authorized Build-Operate-Transfer (BOT) projects, at least in part as a means of limiting public expenditures and thus limiting new public-sector debt accumulation.

Permitting foreigners to hold an equity stake in economic activities in Korea has been contrary to the country's self-reliant development strategy. Although such arrangements are now legally permitted, implementation may be slow due to ingrained attitudes and institutional arrangements which lag behind policy pronouncements. Another factor that likely influenced the decision to permit BOTs was Korea's increasing need to access advanced technology. As Korean industry has become more sophisticated, its manufacturers have begun to directly compete with those of advanced countries. The proclaimed legitimacy of BOT arrangements and the pledge to enforce IPR may signal a new willingness by Korea to entertain foreign investment and represent a genuine departure from past mercantilist policies.

US-AEP/Korea is represented by two full-time Technology Representatives, one having an environmental technology background and the other having a business and financial background. The TechReps work under the direct supervision of the US&FCS but are located in a separate office building. The US-AEP strategy in Korea is, over the near-term, to market US-AEP as much as possible to build up an awareness of the program in Korea, and, over the longer-term, to integrate US-AEP services into major public and private sector environmental activity.

In addition, EPA staff have visited Korea and identified opportunities for Action Team missions and the US-AEP office in Korea had completed, or planned, about 20 professional and organizational development (POD) activities as of May 1994. This is roughly the same level of activity as listed for Singapore, Taiwan, Hong Kong, and Malaysia, the other US-AEP Tech Rep offices that operate in countries where there is no USAID office. Project

reporting from April 1994 listed a total of 20 POD activities "Approved, Underway and/or Completed." In the case of Korea, 11 of the 20 activities were done by the Asia Foundation.

### **US-AEP Highlights**

- In general, the impressive work of the TechReps has enabled the US-AEP office in Korea to generate business prospects which may lead to substantial sales of US environmental products and services. In fact, US-AEP/Korea has already been instrumental in enabling a US firm to be in a competitive position to win a large government contract (\$245 million) to build and manage a municipal wastewater treatment plant. This is but one of a dozen or more high-priority pending government contracts that US-AEP has targeted as an opportunity for increased US involvement in Korea's environmental infrastructure sector.
- The US-AEP Technology Representative Office in Korea has made substantial progress in penetrating the government and businesses networks that will be responsible for planning, approving and implementing the country's environmental infrastructure projects. This is a solid foundation upon which future success may be generated.

### **Principal Conclusions and Recommendations**

- The strategy to build up a knowledge of US-AEP in Korea has been successful in generating a large number of inquiries about US-AEP services.
- The Korea office has produced more trade leads than any other US-AEP office. However, the Tech Rep office has cited a lack of responsiveness by US firms to the trade leads sent out through the ETNA system. This has led to evaluation team to conclude that the TechReps (US&FCS) should be given greater latitude in determining the methods that are likely to lead to commercial transactions over the near-term. This might result in less emphasis being placed on generating daily trade leads as, for example, TechReps and US&FCS might decide to give increased priority to organizing trade fairs or programming environmental business exchanges.
- Korea has not been a significant user of POD activities. US&FCS does not encourage TechReps to spend time on POD activities because they stated that these activities have a low-probability of resulting in business transactions. However, an increased use of POD activities could be useful for building long-term relationships and giving the project credibility with the Korean government, and for enabling the US-AEP to maintain an image as something more than just a promoter of US business.

## **Lessons Learned**

- The Korea program may provide a model for tracking large infrastructure projects and helping US firms to compete for such contracts. USAEP-Korea's efforts to help US firms compete for infrastructure projects could be studied to identify ways that information can be tracked and put into a format that would be useful to TDA, EX-IM Bank and OPIC, in order to increase opportunities for their involvement. Opportunities for US firms to participate in the development of environmental infrastructure projects seems particularly promising given that Korea now appears interested in promoting BOT financing schemes (as are governments in the Philippines, Sri Lanka, Indonesia, China and Thailand).
- The TechReps efforts to use the media and various other "multiplier" fora seem to have been central to US-AEP's ability to make its presence known. TechReps in other US-AEP countries might be encouraged to spend time "advertising" the project in order to create an environmental business network, as per the strategy followed by Korea.

## **Country Summary - Malaysia**

The Malaysian market for US environmental technologies appears to be fairly strong, despite Malaysia's fairly small population (20 million people). Discretionary budgets for environmental restoration and protection seem to be available in many companies, and generally speaking the laws for environmental protection are fairly strong -- although, as in most countries, compliance is still a problem. The evaluation team encountered an almost unanimous opinion that US environmental technology was extremely good, and often superior to Japanese and European technologies. Furthermore, many Malaysian companies prefer to work with US companies because of the American entrepreneurial style and because of common language.

Malaysia's economy is one of the most advanced (in terms of income level and industrialization) of all the countries in which US-AEP has activities. The economy has been growing at an annual rate of about 8 percent a year, and is expected to continue at this pace. The government's goal is to have Malaysia on the same level as most OECD nations by the year 2020. The main implication for the US-AEP program is that the country has reached the stage where environmental awareness is taking a strong hold on government, business, and consumers; and income levels are high enough to allow increased spending on protecting the environment.

The US-AEP's activities in Malaysia are relatively new, compared to other countries with Technology Cooperation offices. The Tech Rep office began operations in February 1994, whereas most other countries began operations in Fall of 1993. The office in Kuala Lumpur is staffed by the Director, her deputy director, and an administrative assistant. The office is

separately located from the US Embassy, which is nearby. There is no USAID presence in Malaysia. There is one existing environmental project sponsored by USAID -- the ASEAN Environmental Improvement Project (EIP), though its activities seem to be fairly limited. Also, the Private Investment & Trade Opportunities (PITO) Project has some environmental components.

US-AEP's POD activities have been fairly limited, but are increasing. WEC business exchanges have yet to be utilized. The Asia Foundation Environmental Fellowships have nearly doubled over the past two years. USETI courses have so far been fairly limited.

### **Principal Conclusions and Recommendations**

- The US-AEP in Malaysia is viewed by Malaysian government, business and NGO community as being primarily concerned with trade promotion. The lack of an in-country US-AEP coordinator who oversees both technology cooperation activities and development activities has contributed to US-AEP's identity in Malaysia. If the US-AEP project were concerned about this image, it would need to expand the responsibilities of the Tech Rep to include oversight of POD programs. This would necessarily reduce the amount of time the office has to spend on trade promotion activities and generating trade leads, or require additional staff.
- Trade lead generation has been fairly strong, especially given the short history of the KL office. However, it is unclear if these leads have been effective in generating US business sales. The office had opened only recently, so it is hard to judge the office based on directly attributable sales. The Tech Rep seems to be generating some business for US firms, although not necessarily through the trade lead process. For example, one Malaysian company purchased equipment after meeting U.S. representatives at US HazMat conference. Travel for the Malaysians to attend the conference was provided through NASDA under its US-AEP Cooperative Agreement.
- In general, more coordination is needed in Malaysia in order to better utilize the US-AEP spectrum of services and programs, if this is a US-AEP goal. The Tech Rep is in the best position to do this, as there is no USAID Mission and the Office of Technology Cooperation is generally identified with US-AEP by the Malaysians.

## **Country Summary - Philippines**

The Philippines has close historical and economic ties to the US and allocations of US economic assistance have consistently been among the highest received by any country, although levels have recently reduced with the closing of several US military bases. The long-term ties between the US and the Philippines have created a market that is especially open to ideas and technologies from the US.

As a developing economy, the Philippines is still highly agricultural, although the industrial base is expanding significantly. Especially around Metro Manilla, environmental problems from industrial, commercial, residential and transportation are severe as air and water pollution and growing mounds of waste are affecting the quality of life and health of all citizens.

The responsibility for US-AEP in the Philippines is split between USAID and the Technology Representative in US&FCS. In addition, the Asia Foundation has a country office in Manila and the Biodiversity Conservation Network has just opened a regional office for their US-AEP activities. A US-AEP Regional Representative will also open an office in Manila in the next few months. Finally, US-AEP also has a liaison assigned to the Asian Development Bank (ADB).

USAID has taken primary responsibility for all activities except for trade under US-AEP. The Tech Rep is responsible for trade activities. The USG has a monthly informal meeting of all USG staff, contractors and PSCs with interests in the environment. The USG representatives at this meeting, chaired by the Director of the Office on Natural Resources and Decentralization, include USAID project officers, the Senior Commercial Officer of US&FCS, the ADB liaison, the US-AEP/ADB liaison, a USIS representative and the Tech Rep. In addition, staff from a number of USAID funded projects, TAF and the BCN also attend. This body has no decision-making power and is organized to share information and to allow for networking among the organizations as ideas develop.

### **US-AEP Highlights**

Given the tens of millions of dollars that USAID has obligated for environmental projects in the Philippines, the Mission sees US-AEP as a means of adding value to its existing program. This means the Mission can provide additional training and other experiences to enhance and upgrade the skills of the persons associated with their program at no additional costs. In addition, they can choose to target people from areas of the country outside Metro Manila who normally might be excluded from existing programs. And they are able to access the skills and services of a wide array of institutions that they otherwise could not due to the limitations of existing.

US-AEP has a niche in the Philippines within a very strong US environmental program. The ADB and technology cooperation efforts are components that add significant new services to

the US' extensive environmental activities. The US-AEP liaison in the ADB provides an important opportunity for US firms to increase their involvement in the design, construction and management of environmental projects throughout Asia. The US-AEP ADB liaison has been able to build on a very active FCS presence and, in general, seems both well know and well regarded within the ADB.

### **Principal Conclusions and Recommendations**

- In the Philippine's environmental sector, there is a complementarity of efforts between the Technology Representative, USAID, US&FCS, ADB, TAF, and other local USAID projects. The coordinating committee, in which they all periodically meet, provides a good means for communication and coordination.
- Given the short amount of time that the Tech Rep office has been functioning, the outreach programs are good. Knowledge about the office and its services is expanding, both through various sectors of the economy and regionally throughout the country. The office is systematically making presentations to major industry groups, such as: pulp and paper; chemical; pollution control; steel; and, cement.
- The Technology Representative has been on the job for less than a year. In this start-up time (10/93-8/94), he and his deputy have generated 79 trade leads and have taken the US-AEP goal of generating one trade lead a day very seriously. However, to date, the office was unaware of any trade deals which had resulted from the trade lead process. The Representative feels that the taxonomy is not valid or varied enough in the GEM system to fully describe the potential lead. Also, the Tech Reps had the impression that US firms have been slow to respond to the leads that have been generated.
- There was a high rate of satisfaction with the activities of TAF, USETI and WEC. Although it seemed that the WEC program could be more effective if it were linked more closely with overall USAID efforts. NASDA was also well regarded, although several persons commented that the trade missions should be more demand driven and in-touch with what the country needs. This will require greater coordination with the local US-AEP technology cooperation offices and more preparation time.
- The USAID mission is not sufficiently clear on the resources it has available, such as the number of slots for WEC, TAF, or USETI, which makes it difficult to make even short-term plans. From the field, it appears US-AEP/Washington frequently changes its focus and does not have clear objectives.
- The linkages between the POD efforts and the trade side are weak. The assessment team found that most USETI, WEC, and TAF participants know very little about the trade efforts even though they would be natural links with their organizations in the public and private sectors.

- There is insufficient administrative resources to support the US-AEP program within the USAID mission, and this has limited access to US-AEP resources. The USAID mission, however, has plans to use US-AEP funds to hire an administrator to oversee the program.
- BCN is looking for NGOs to carry out its program, rather than providing general support for NGO biodiversity work. For this reason, some NGOs felt that BCN was a difficult program to work with. In its beginning, the BCN grant process was confusing to NGOs in terms of what types of activities would be funded and the criteria for receiving funding. However, the process has since improved and the Philippine office has made a big difference in improving communications, technical assistance, and coordination with NGO grantees.

### **Country Summary - Singapore**

Singapore is an island city-state with a population of about 2.5 million people. As a rapidly developing middle income economy, Singapore itself requires services on the high end of sophisticated environmental technologies. Singapore has recently developed the Singapore Green Plan, action programs to help the country evolve into a Green City by the year 2000. This ambitious plan focus on building environmental consciousness, promoting corporate environmental responsibility, developing environmental management and infrastructure projects in government and industry, and conserving the limited natural areas on the island.

Singapore has a mixture of activist/authoritarian government with a very market oriented economy. This means that in the environmental field, the government takes a clear role yet industry has strong representatives and influence in the development of any policies. NGOs in general are rare and often government affiliated. The one principal environmental NGO was started with funding from the Ministry of Environment and has office spaces in the ministry's building. With only five percent of its land dedicated to natural preserves, many of which are modern parks, green issues do not play a major issue in Singapore's environmental program.

Singapore is a regional center for trade and services. With exports of services and technology leading the economy, the major markets for environmental technology are actually outside of Singapore. The local consulting and engineering firms are active in securing contracts and bids on projects throughout Southeast Asia. Many multi-national American, Japanese and European firms have offices in Singapore to tap this regional market.

US-AEP in Singapore, coordinated by the Technology Representative and her deputy, has an office and a separate identity from other US programs. There is no USAID or TAF presence in Singapore. The US&FCS operates an active office and the Technology Representative coordinates with this office, located in the same building but on different floors. Two other USAID programs operating in Singapore are the ASEAN Environmental Improvement

Program (EIP) and PITO, both of which have offices in the same office building. US-AEP and the EIP offices may combine in the near future.

US-AEP activities in Singapore have included five fellowships processed by TAF, all of which included visits to USEPA offices, and three USETI participants attended courses on wastewater technologies and air quality control. There have not been any WEC, EPA or BCN activities in Singapore. The American Chamber of Commerce Environmental Committee has acted as the Steering Committee for US-AEP.

### **Principal Conclusions and Recommendations**

- The visibility of the US-AEP Office is seen by Singaporean government officials and business representatives as being proactive and able to respond quickly to requests. The office also seems to be generally considered as a good source of information about US companies and technologies.
- In addition to the US-AEP Office, the EIP office is seen as being productive and is well regarded. The sum of US efforts has made some positive in-roads within the local environmental business community. Both organizations have participated in sponsoring local conferences and seminars which further spread the word about the program as well as demonstrated American capabilities and technology.
- The Tech Reps had generated 95 trade leads as of October 1994, and reported that these leads had resulted in three sales valued at nearly one million dollars. The responses to trade leads by US companies have been inconsistent. The Tech Reps estimate that up to 60% of the responses are relevant to the original lead.
- Although the POD component had been used sparsely in Singapore, the impression of the participants has been favorable. TAF fellows reported that their programs gave them both skills and new contacts for their jobs, and USETI participants had stated that the courses were useful and had met their expectations. USETI courses do not appear to be broadly publicized and utilized in the US-AEP program. With the Technology Representative's focus on trade, there is no strategy for how to utilize USETI courses in the program.
- The various efforts of US-AEP, EIP, PITO and US&FCS have been at times duplicative, as there has been only a loose clarification of the objectives and roles of each organization. Each organization is not completely aware of the others programs and abilities, and, therefore, there have been some missed opportunities to use each other's programs as a resource. This is perceived by the Singaporean government as a question of who does what.
- Budgetary alignment within US&FCS for US-AEP prevents US-AEP from responding like a private sector organization. The US-AEP office cannot pay for relevant

memberships in organizations, participation in trade fairs and conferences, nor purchase equipment in a timely manner.

### **Country Summary - Sri Lanka**

Sri Lanka is a small South Asian developing country with the goal of reaching middle income status by the year 2000. The country's industrial base is still relatively small but growing rapidly. Industrial production, particularly for export, is expected to provide a significant proportion of the GDP and is the basis for all future growth. However, the infrastructure for dealing with industrial pollution, water, solid and hazardous waste is minimal. Most waste is dumped into available waterways and a dumpsite for solid or toxic wastes is just in the planning stages.

US-AEP activities in Sri Lanka have been coordinated by the USAID Mission, which itself manages a development portfolio that gives prominence to environmental issues. US-AEP has been a means for USAID to expand its current portfolio of environmental projects. USAID bilateral activities focus on biodiversity conservation, adoption of environmentally appropriate practices, policy change, and strengthened institutions. In addition, one of the mission's strategic objectives is "improved conservation and use of environmental resources for sustained development." This has meant that the mission uses of AEP resources has been focused fairly exclusively on waste management and reduction projects.

The US-AEP resources used to date have been the Asian Foundation internships, USETI courses, and WEC environmental business exchanges, as well as US-AEP funds directed to country programs. All of these resources have been coordinated by the Mission in their portfolio to advance the already committed projects.

The USAID mission has used its part-time environmental officer to coordinate US-AEP activities but has plans to hire a PSC to oversee an increased use of US-AEP resources. There is no US&FCS Technology Representative in Sri Lanka, although this may change in the next few months. In addition, there are no BCN projects and minimal trade activities through NASDA. An advisory committee exists for the USAID Natural Resources and Environment Policy Project and has functioned in an unofficial capacity as a US-AEP Steering Committee.

### **US-AEP Highlights**

There is a good programmatic fit between US-AEP and the Mission's program priorities. USAID/Sri Lanka provides an example of a country that has focused all of its USAEP activities into strengthening existing bilateral environmental projects. In this way, US-AEP has strengthened USAID's ability to meet its objectives in a cost-effective manner, and provided the mission access to a wider range of environmental services and organizations than would have otherwise been the case.

## **Principal Conclusions and Recommendations**

- Although US-AEP funds used in Sri Lanka have been relatively small, the Mission has accomplished a lot in the short-term. Existing USAID environmental projects have been strengthened by use of the TAF fellowships, WEC business exchanges and USETI training courses. Key project staff were trained in environmental management and exposed to new technologies in this that increased their abilities to carry out their jobs. And, Sri Lankan consultants in the pollution control area learned new skills by working with WEC pollution control auditors.
- The USAID staff reported that there is no overall workplan for using US-AEP components to support the mission's programs, although US-AEP sources report such a plan does exist.
- Despite weekly fax updates from US-AEP, information on its components and how to access them are not widely known within the Mission or in other organizations that should know about them.

## **Lessons Learned**

The variety of US-AEP services/products that are available means that it can be a useful adjunct to nearly any existing AID environmental project. AEP provides a useful complement because of the wide variety of institutions and services that can be accessed. However, in order for a USAID mission to effectively understand and program the range of AEP services available a full-time and dedicated staff-person may be necessary. This is because a concerted effort is necessary to understand the range of institutions AEP works, it is probably necessary that the individual be familiar with the details of USAID bilateral environmental projects, and significant time may be required to identify and program activities.

## **Country Summary - Taiwan**

A number of activities have taken place in Taiwan under the auspices of the US-AEP, both prior to and subsequent to the establishment of the AEP-funded Tech Rep office in Taiwan in September 1993. The Commercial Office of the American Institute in Taiwan (AIT) has supported efforts to encourage trade in environmental goods and services for a considerable period of time. Once alerted to the announcement of the US-AEP program to support environmental protection efforts in Asia, the Commercial Office made a targeted effort to encourage the participation of the US-AEP in Taiwan.

As the AIT acts on behalf of the USG in Taiwan, the TechReps are responsible to the Senior Commercial Officer (SCO) for AIT. At the time of the evaluation team's visit, the Tech Rep Director position had been vacant since the beginning of the year, and the acting director had

recently found a position with an environmental firm in Taiwan, leaving both AEP positions vacant.

Taiwan has a growing and prosperous economy and seems willing to spend on both environmental goods and services, as well as to making funds for US-AEP training/technology demonstration/grant programs. On a number of occasions during the interviews it was stressed that Taiwan has funds and is very willing to use them to pay for high quality services.

The following are the US-AEP activities that had taken place in Taiwan as of August 1994.

- In 1993, TAF successfully located, nominated and sent four environmental fellows to the US and received one US fellow.
- USETI, at the initiative of the AIT, developed a special two-day course entitled "Environmental Quality Management Training" for ten local government-level Taiwan Environmental Protection Administration (EPA) officials.
- WEC had completed one environmental business exchange in Taiwan.
- NASDA sponsored ten grants to firms who have brought their programs/technologies to Taiwan. With the exception of one sub-grant, there had been very little Tech Rep or AIT involvement in these activities other than courtesy contacts.
- The USEPA has a separate and active bilateral agreement with Taiwan to undertake a number of activities and no separate AEP-funded activities had taken place.

There has been a clear difference in vision/strategy on the most effective way to promote development of business to business relationships in the environmental field in Taiwan. While the Secretariat has viewed the major task of the Tech Reps as the generation of trade leads, the emphasis of the SCO has been to support a program of environmental trade delegations, trade shows, and seminars. As a result, conflicts have arisen. The SCO clearly sees the Tech Reps as an extension of the overall trade promotion effort, allowing other Commercial Office staff to focus on other trade aspects while the Tech Reps concentrate their efforts on environmental products and services. The SCO also stated that he believed that the various activities which that office has undertaken are more effective than trade leads in developing long-term relationships between US and Taiwanese firms and providing sales opportunities.

## **Principal Conclusions and Recommendations**

- The Tech Rep staff in Taiwan seem to have established excellent relations with the Taiwanese environmental community and with AIT leadership. Links to the SCO have allowed access to high level government officials, particularly the Taiwan EPA.
- The Tech Reps in Taiwan have not placed a high priority on producing trade leads. Those that they have produced and forwarded to the US via the trade lead system system have received either no response or irrelevant responses (firms which are attempting to sell a different technology than the one requested in response to a specific lead). The system in place for matching trade leads with private sector firms in the US seems not to be working.
- The Tech Reps are not operating under clear lines of authority. Training provided to Tech Reps has emphasized US-AEP Secretariat leadership yet the IAA states that the Tech Reps are responsible to the senior representative of the Department of Commerce, in this case the Senior Commercial Officer (SCO) at AIT. In order for the Tech Reps to be effective, the Secretariat and the DOC must agree upon the focus of the program and clarify lines of authority.

## **Country Summary - Thailand**

Thailand has been experiencing tremendous economic growth over the past decade and real GDP growth in 1994 is projected to be near nine percent. A decade of rapid economic growth has left Thailand in need of a long list of new "environmental" facilities, including municipal water and wastewater systems, increased sources of clean power generation, solid waste disposal facilities, and new wastewater treatment technologies that can be used on a site-by-site basis throughout Bangkok. (Bangkok itself has no central wastewater treatment system but rather requires that each new high-rise building and hotel install their own system.)

Thailand's need for environmental infrastructure and services are far beyond the government's ability to finance. Consequently, the Thai Government is increasingly turning to innovative methods for leveraging private sector financing; requiring new high-rise buildings and hotels to build their own wastewater treatment facilities is but one example of attempts to shift infrastructure costs to the private sector. Build-Own-and-Transfer financing schemes have also gained increased popularity in Thailand over the past several years and present vast opportunities for international firms to compete in joint ventures to design, construct and or operate large infrastructure projects.

US-AEP has been active in Thailand since early in 1993 when WEC began identifying Environmental Business Exchange participants and the USAID mission requested an EPA Action Team to study air pollution problems in northern Thailand. US&FCS activity began

with the hiring of Technology Representatives in late 1993. Thailand has since become one of US-AEP's most active countries with an on-the-ground presence that includes: Technology Representatives who, under the direction of US&FCS, generate trade leads, conduct marketing surveys, organize trade missions and liaise with Thai government and private sector officials; an Infrastructure Advisor, working out of the USAID/Thailand-funded US-Thai Development Partnership, who helps to coordinate USAID/Thailand and US-AEP resources to support municipal development; and WEC and Asia Foundation offices which help to program business exchanges and fellowships. In addition, EPA has sent several action teams to Thailand and USETI and NASDA have made multiple trips to Thailand to identify candidates for US business-sponsored training programs and trade missions.

### **US-AEP Highlights**

In northeast Thailand (Mae Moh), US-AEP played a prominent role in helping to solve a major environmental problem. In this case, a USEPA Action Team was brought in to analyze a major environmental problem (too much sulfur dioxide being released into the atmosphere); USETI arranged for the Electrical Generation Authority of Thailand (EGAT) to receive training about technologies appropriate to address the problem; a US firm was able to sell products to the Thai government to solve the problem; and the USEPA continues to stay engaged with EGAT's Mae Moh operation through its development of a computer model that will be used to help manage electricity generation in a way that avoids a recurrence of the problem.

### **Principal Conclusions and Recommendations**

- US-AEP has been useful and effective as a convenient mechanism for the USAID mission to access funds, technical skills and training to expand its existing portfolio environmental projects.
- Thai organizations that have benefitted from the US-AEP program have been impressed with US-AEP-contracted implementing organizations and with the quality of the services provided, and have benefitted from opportunities to expand their knowledge about available environmental technologies and management systems.
- On the commercial side, US-AEP has proven its ability to generate sales of US technology and services. Sales of US products and services in Thailand have resulted from the activity of the Tech Reps, from USETI training courses, from WEC business exchanges, and from NASDA trade missions.
- It seems reasonable to expect that the US-AEP Infrastructure Advisor placed at the US-Thai Development Partnership (Kenan Institute) will be in a position to achieve substantial success in improving municipal environmental conditions in Thailand. (The Infrastructure Advisor has been in place since July 1994.) This effort appears to

have created a sensible management structure that will be capable of integrating US-AEP services into USAID/Thailand's ongoing infrastructure development activities.

- Despite impressive US-AEP successes in Thailand, there is no effective overall program management at the country-level. This situation has resulted from the lack of designating an overall US-AEP/Thailand program manager and a lack of clarity concerning the roles and responsibilities of principal US implementors, particularly the US&FCS. Both USAID and US&FCS have their own agendas and priorities for Thailand, but there is no effective mechanism to coordinate or link US-AEP's development and commercial agendas.
- US&FCS should be given greater latitude to generate the sale of US environmental services and products through undertaking activities it determines to be the most effective use of its time and resources. US-AEP could encourage this by collaborating with US&FCS in: defining program objectives; determining means for monitoring and reporting US&FCS accomplishments against the achievement of those objectives; and by using performance data to periodically revisit and revise strategies and tactics.
- The performance of the TechReps should not be assessed solely according to the number of trade leads generated, but rather on criteria which measure the volume of business generated (or the number of firms achieving success in entering a new market).

#### **Lessons Learned**

- US-AEP has achieved notable success when a "bundle" of the project's resources were programmed in support of a specified Thai institution or environmental problem. The success of such efforts are dependent upon someone in-country having a full understanding of the range of US-AEP services available, knowing how to access those services, and placing some degree of priority on US-AEP's "development" mandate, an aspect of the project which has seldom been given prominence by US&FCS. USAID has been able to do this in pursuit of its own agenda but, for various reasons, a synergy between the activities of US&FCS and USAID has not been realized.

## **Annex C**

### **Assessment Methodology**

## **Annex C: Assessment Methodology**

The mid-term assessment was conducted as part of the overall Quality Assurance program (i.e., a continuous look at evaluation and quality issues), to support and strengthen the program's strategic vision, to identify important quality assurance concerns, and to permit timely and appropriate decisions by program management. The assessment was conducted as part of on-going efforts by Management Systems International (MSI) to apply Total Quality Management (TQM) principles to the implementation of US-AEP. As part of its implementation contract, MSI is also responsible for designing and implementing a system for monitoring data used to review progress and adjust implementation strategies.

In a combined, collegiate effort (rather than engaging in an independent evaluation), the assessment team included MSI staff, Tropical Research and Development (TR&D) staff, (who served as resource personnel), evaluation methodologists, technical environmental advisors, and AAAS fellows. The list of team members is shown below. The conclusions reached and recommendations made at the conclusion of the assessment provide the capability to finalize the development of the Program Performance Information System, to further refine the PRISM-based monitoring system for US-AEP, and to improve overall quality of the US-AEP program.

### Team Members

Norman A. Endlich	Management Systems International
J. Patrick Adcock	Econergy International
David Callihan	Management Systems International
Laura Efros	AAAS Fellow/USAID
James Fremming	Labat-Anderson, Inc.
Alan Lessik	Management Systems International
Vicki MacDonald	Tropical Research and Development
Mark Powell	AAAS Fellow/USAID
Frederick Renner	Econergy International

In addition to assessing and providing feedback concerning specific program areas of activity, a necessary outcome was to provide similar feedback to the program's participants. These participants are identified as follows:

Secretariat	Director General, Managing Directors/Managers of Technical Coordination, Operations, Outreach and Partnering, Program Analysis, Total Quality Management
Program Management	Technical Support Managing Director and Staff (TR&D)
USAID	Personnel within the Agency for International Development with whom program personnel interface; includes AID's concern with Managing for Results and the PRISM exercise. Also includes USAID field missions in countries where US-AEP has implemented programs.
QA Personnel	Quality Assurance Contractor (Management Systems International)
Technical Representatives	US-AEP Environmental Business Representatives and Asia
Implementing Organizations	Government and Non-Governmental agencies and organizations with which US-AEP formed partnerships
Funding Organizations	US business activities which assist with and/or provide technical and financial resources
Sponsoring Organizations	Agencies which sponsor companies receiving grant incentives
Grant Recipients	Companies receiving grant incentives to generate innovative business transactions and relationships
FET Personnel	Professionals involved in fellowships, technology exchanges, training activities, and environmental action teams
Field Offices	Foreign Commercial Service Contacts with whom US-AEP Tech Reps and program personnel interface

**US/Asian Partners**

**Asian community, business, and government organizations and agencies with which partnerships are formed**

Work for the team began on June 20, 1994, with a day-long planning meeting. This meeting included consultations with members of the Secretariat. At subsequent weekly meetings, the team refined the assessment design, developed data collection tools, clarified respective roles and responsibilities for team members, identified priority sources of data, and developed a schedule for field work.

The assessment design originally proposed some opportunities for data collection by mailed survey. As this technique was considered along with other options, it became clear the primary approach of the overall assessment was to be qualitative, and in the end providing almost exclusively narrative information about current progress and concerns surrounding US-AEP activities. The team was also aware that some implementing organizations (WEC and TAF) were in the process of conducting their own survey-based internal evaluations. The team therefore concluded that under these circumstances the most useful information the team could provide to stakeholders was information which emphasized participants' interpretations of US-AEP activities -- that is, qualitative interviews.

Focused interview guides, geared to respondents from different types of organizations, were developed by the evaluation methodologist, and reviewed and approved by the team. In addition, general interview guidelines were shared with the team to support validity and reliability of interview data. Interview data were supplemented by extensive documentary information gathered from TR&D, the Secretariat, and interview sources in Washington and in Asia.

In developing the schedule for fieldwork, the intent was to maximize the team's opportunities for interviews in countries with technology representatives, since it is in these countries that US-AEP is most active. Members of the team collected data in Hong Kong, India, Indonesia, South Korea, Malaysia, the Philippines, Singapore, Sri Lanka, Taiwan, and Thailand. Country teams of interviewers produced initial summaries of US-AEP country experience, often still while in-country. These summaries, plus the results of approximately twenty (20) interviews in Washington, DC, formed the basis of information for a team wrap-up on September 13, 1994. This meeting focused on development of responses to the originally defined assessment criteria, and resulted in the agreed-upon conclusions and recommendations. Write-up and review of the report took place in late September and October.

The evaluation approach is strong in that it does meet the broad coverage needs of this interim assessment of a complex program. It also enjoys reliability strengths based on multiple trained interviewers actively comparing their results, and the derivation of results from ten (10) countries and diverse sites in Washington, DC.

While US-AEP operates in 34 countries, the ten countries visited by the assessment team represent over 91 percent of the project's total overseas activities, and over 92 percent of POD activities. Highlights of the country visit reports are presented in this report as Annex B. The US-AEP presence for each of the ten countries visited by the assessment team is presented in the Table below.

**US-AEP Presence**

<b>Country</b>	<b>USAID Presence</b>	<b>Tech Rep Office</b>	<b>Other US-AEP-Funded Field Personnel</b>
Hong Kong		✓	
India	✓ (Delhi)	✓ (Bombay)	
Indonesia	✓	✓	TAF field office, Infrastructure Advisor, WEC office
South Korea		✓	TAF field office
Malaysia		✓	TAF field office
Philippines	✓	✓	TAF field office, ADB Tech Rep, BCN field office, USAID US-AEP regional coordinator since 9/94
Singapore		✓	
Sri Lanka	✓		TAF field office, PSC hired by USAID to manage training and TA
Taiwan		✓	
Thailand	✓	✓	WEC field office, TAF field office, infrastructure advisor hired by USAID to work at US-Thai Development Partnership

Perhaps the primary weakness of the assessment is that interviewees in Asia were largely selected by Technology Representatives. Although the assessment team did not realize it at the time when schedules were set-up, the Tech Reps, in general, have a limited knowledge of the activities of other US-AEP implementors. This is especially true concerning POD activities.

The assessment team also had a particularly difficult time putting together a standard by which the evaluation would be conducted. Although US-AEP had *a priori* identified two strategic objectives under which the project was operating (see Annex A), these objectives had not been used to direct the programming of particular activities, nor did they identify particular environmental objectives that the project was to address. Because there was not consensus within US-AEP about its objectives, performance data had not been consistently tracked. This assessment, therefore, concentrated on the effectiveness and managerial efficiencies of individual project components, and the management, synergy and impact of US-AEP activities in 10 of US-AEP's most active countries of operation.

## **Annex D**

### **Persons Interviewed**

**ANNEX D  
PERSONS CONTACTED**

**1. WASHINGTON, DC, INTERVIEW CONTACTS**

**USAEP Secretariat**

Owen Cylke, Technical Coordination Advisor  
Lewis Reade, Director General  
Cynthia Sayers, Managing Director, Technical Coordination  
Richard Sheppard, Operations Managing Director  
Tim Titus, Outreach and Partnering Managing Director

**USAID/Washington**

Linda Morse, Director, Asia Bureau

**Tropical Research and Development**

Joyce Coffee, Professional and Organizational Development; Biodiversity Conservation  
Melissa Dann, Professional and Organizational Development; Biodiversity  
Conservation  
Peter Gourlay, Technology Cooperation  
Carl Hanson, Information Systems  
Peter Illig, Outreach Partnership  
Ken Langer, Environment/Energy Infrastructure  
John Mapes, Business Development Partnership  
Mike Met, Technology Cooperation  
Elise Rand, Public Affairs and Communications  
Loren Rodwin, Environment/Energy Infrastructure  
Albert Short, Managing Director  
John Speicher, Administrative Manager  
Yin Star, Desk Officer  
Margaret Sullivan, Public Affairs/Communication

**Implementing Organizations**

**A. Bankers' Association for Foreign Trade**

Dan Bloom, Deputy Director  
Bryan J. Van Deun 11, Project Manager, AXCAP

**B. Biodiversity Conservation Network**

Hank Cauley, Director

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**C. Environmental Technology Network for Asia**

Maria M. Chen, Environmental Business Advisor  
Deborah Diaz, CTIS  
Joe S. Duncan, CTIS Contract Manager  
Brendan Walsh, Environmental Business Advisor

**D. Infrastructure Finance and Advisory Service**

Xavier Perez, K & M Engineering

**E. National Association of State Development Agencies**

Karen Britto, Director, International Business Development  
Meaghan Conte, Deputy Project Director, Environmental Programs  
Miles Friedman, Executive Director  
Brian Furness, Senior Program Manager  
Cristina Go, Georgia Department of Industry, Trade & Tourism

**F. United States Department of Commerce**

Herbert A. Cochran, Director, East Asia and Pacific, Office of Foreign and Commercial Services

**G. United States Environmental Protection Agency**

Wendy A. Comeau, International Specialist, Office of International Activities

**H. United States Environmental Training Institute**

Edith Cecil, Executive Director

**I. United States Export-Import Bank**

Terrence J. Hulihan, Vice President-Asia

**J. United States Overseas Private Investment Corporation**

R. Bosworth Dewey, Program Officer, Environmental Enterprise Development Initiative

**K. United States Trade Development Agency Frederick Everheart, Director for Asia**

Frederick Everheart, Director for Asian

**2. US-AEP PARTICIPANTS INTERVIEWED LISTED BY COUNTRY**

## **HONG KONG**

### **FIELD OFFICES**

David Katz, Consul, Commercial Affairs, USDOC/US&FCS

### **ASIAN PARTNERS**

Stephen Lam, Exec. Dir., Private Sector Committee Environment Center  
John Fung, Managing Director, Four Gay Engineering  
Evans Ward, Legislative Assistant, Office of Christine Loh, Legislative Councillor  
Kong Ha, Sr. Env'l Protection Officer, Vehicle Emission Control Section, Hong  
Kong Environmental Protection Department  
Mike Stokoe, Asst. Dir., Waste Facilities, Environmental Protection Department,  
Hong Kong  
Alex NG, Ag. Principal Environmental Protection Officer, Air Policy Group,  
Environmental Protection Department, Hong Kong

### **FET PERSONNEL**

Ricky Liu, Environmental Protection Officer, Hong Kong Environmental  
Protection Department, Technical Support Unit

### **US PARTNERS**

Jeffrey Bader, Dpty Principal Officer, American Consulate and chair of the USAEP Steering  
Committee.  
Albert Bast, Sr. V.P., Parsons Brinkerhoff (Asia) Ltd.  
Timothy Shepard, Dpty. Dir., Asia-Pacific, Maryland Centre Hong Kong  
Elina Lee, Mgr., Trade & Investment Services, California Office of Trade and Investment

## **INDIA**

### **US-AEP**

Vinay Gadkari, Technology Representative  
Smita Norohana, Administrative Assistant  
Sheela Nena, Sr. Business Representative Candidate

### **US-AEP Advisory Panel -- Bombay**

Yogen Parikh, General Manager, Environmental Engineering  
Darryl D'Monte, Independent Consultant / Journalist  
Dr. Saranathan, Vice President, SOCLEEN (Society for Clean Environment)

Dr. D. Kantawala, Chairman, Kantawala & Shah, Environmental Engineering  
Consultants

**US-AEP Steering Committee -- Delhi**

Sanjiv Khanna, Senior Commercial Specialist  
Mike Benefiel, Commercial Attache  
Grace Morse Brunton, Foreign Service Officer, USIS  
Kira Glover, Environmental Section of Science Office, US Embassy  
David William, Foreign Agricultural Service, Agriculture Attache, US Embassy

**USAID/India**

David W. Hess, Environment and Energy  
Amitabha Ray, Office of Environment, Energy & Enterprise  
Dick Goldman, Director, Office of Environment, Energy & Enterprise  
Felipe Manteiga, Private Sector Officer

**US and Foreign Commercial Service**

John S. Wood, Commercial Counsel

**The Asia Foundation and Fellows**

Inder Jit Singh, President, Tiger Paws Adventures  
M.C. Mehta, General Secretary, Indian Council for Enviro-Legal Action

**USETI Participants**

Patragadda R.K. Sobhan Babu, Research Associate, Tata Energy Research Institute  
Harmanjit Singh Nagi, Research Associate, Tata Energy Research Institute  
Mr. Panjwani, Deputy Chief Engineer, Solid Waste Management, Municipal Corporation of  
Greater Bombay - American Center

**WEC Environmental Business Exchange Participants**

Surendra Kumar, Shriram Foods & Fertiliser Industries  
Dr. N. Sriram, Vice President, Nuchem Limited  
D. Chatterjee, Manager, INALSA  
Amitav Banerjee, General Manager, Andrew Yule & Company Ltd.  
Ravi Vaidya, Manager - Effluent Treatment, Ion Exchange (India) Ltd.  
Ms. D.B. Baldawala, Director, Industrial Boilers Ltd.  
Dilip Kulkarni, General Manager (Marketing), Western-Paques India Ltd.

**US Government and Contractors**

K. Harinathan, Assistant General Manager, T.E.S.T. Group, The Industrial Credit & Investment Corporation of India Ltd.

**Biodiversity Conservation Network and Grantees**

Rajendra K. Pachauri, Director, Tata Energy Research Institute  
A.N. Chaturvedi, Senior Fellow, Tata Energy Research Institute  
Manoj Dabas, Research Associate, Tata Energy Research Institute  
O.N. Kaul, Senior Fellow, Tata Energy Research Institute  
K.V. Shreedhar, Liaison Officer, The Action Research Unit for Development

**INDONESIA**

**BAPEDAL - Badan Pengendalian Dampak Lingkungan**

Liana Bratasida, Direktur Pembinaan Teknis  
Ria R. Damopolii

**BAPEDAL - PAE Program**

Willy Tjen, Program Director, Technical Assistant Unit

**Biological Science Club**

Yosa Istiadi

**Indonesian Center for Environmental Law**

Mas Achmad Santosa, S.H., LL.M., Executive Director

**LAW Engineering and Environmental Services, Law International, Inc.**

David J. Hopkins, Ph.D., Technical Director

**Lembaga Alam Tropika Indonesia (LATIN)  
The Indonesian Tropical Institute**

Tri Nugroho S.

**Montgomery Watson**

Mohammad Sarwar, P.E., Resident Manager, Indonesia

**PT Bumi Serpong Damai**

Ken D'Angelo, Advisor to the Board of Directors

**PT Enviroindo**

F.J. (Jay) Crawford, Crawford Consultants, Inc.  
Jason Ford, Technical Advisor  
Sylvia Hurlburt, Senior Seminar Coordinator

**PT Metrix Elcipta**

Hermoyo G.Y.S., Marketing Manager  
Ir. Roy Pribadi, Technical Superintendent

**The Asia Foundation**

Ardith M. Betts, Administrative Officer, Environmental Scholars

**The Nature Conservancy**

Marty S. Fujita, Ph.D., Director, Indonesia Field Office

**U.S. Agency for International Development I U.S. Embassy**

Adiwiyana, Industrial Pollution Project Manager  
Jerry P. Bisson, Project Officer, Forestry/Natural Resource Management  
Ketut Djati, Biodiversity Project Manager  
William M. Frej, Director, Private Enterprise Development Office, RHUDO  
Barbara Harvey, Deputy Chief of Mission  
Vivika Mollrem, USAID Mission Deputy Director  
Alfred Nakatsuma, Project Officer, Environmental Institutions and Technology  
El Khobar Nazech, US-AEP Environmental Advisor (Contractor), University of Indonesia  
Robert C. Schmidt, Director, American Cultural Center  
Sidney G. Smith, Counselor, Scientific and Technological Affairs  
Benjamin Stoner, Office Director, Agro-Enterprise and Environment  
Charles F. Weden, USAID Mission Director

**United States and Foreign Commercial Service**

Michael J. Hand, Counselor of Embassy for Commercial Affairs  
Ned Quistorff, Commercial Attache

**US-AEP Representatives**

Mary Boomgard, Infrastructure Representative

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