

PD-ABL-192
13rd 1994

1994

ANNUAL
REPORT



UNITED STATES-ASIA ENVIRONMENTAL PARTNERSHIP

US Department of Interior • Ministry of Environment (Mongolia) • Ministry of Environment and Parliamentary Affairs (Sri Lanka) • Ministry of Environment (Thailand) • Ministry of Environment (Malaysia) • Ministry of the Environment (Singapore) • Ministry of Transportation (Malaysia) • Minnesota Department of Natural Resources • Ministry of Environment (Indonesia) • Municipality of Medan Water Supply Enterprise (Indonesia) • Municipality of Surabaya Water Supply Enterprise (Indonesia) • National Institute of Development Administration, School of Development Economics • National Institute of Environmental Education • North Seattle Community College (NSCC) • Northeast Asia Environmental Forum • Norton Environmental Research Group (NSPIRG) • Oritex Corporation • Ovonic • Owens Manufacturing & Speciality Company • Pacific Environmental Research and Scientific Services (Malaysia) • Philippine Association of Paint Manufacturers, Inc. • Philippine Society of Sanitary Engineers • Philippine Sugar Millers Association • Phoenix Environmental Protection System • Premier Group of Companies • Premier Ziba, Ltd. • Price Pump Company • Prince of Songkla University • PT Pertamina • PT Pertamina Pratiama • PT Indonesia Toray Synthetics (ITS) • PT IPTN • PT Krakatau Steel • Raden Corporation • R.W. Beck, Inc. • Raden Corporation • RAE Systems • Rajahmundry Environmental Services • Rajahmundry Environmental Services • Rajahmundry Environmental Services





"It is now up to us, the business community,
to make use of these various agencies
to **create jobs** at home and
to **help** the region deal with
their **environmental cleanup**
and **pollution reduction**
requirements."

— Thomas McNabb
president, Aquatics Unlimited
International Equipment Corporation
Martinez, California

*Speaking at President Clinton's meeting
with businesspeople
Jakarta, November 1994*

Afghanistan
Bhutan
Brunei
Cambodia
Cook Islands
Democratic Socialist
Republic of Sri Lanka
Federated States of Micronesia
Fiji
Independent State of Western Samoa
Hong Kong
India
Kiribati
Laos
Macao
Malaysia
Maldives
Mongolia
Nepal
Niue
Pakistan
Papua New Guinea
People's Republic of Bangladesh
People's Republic of China
Philippines
Republic of Indonesia
Republic of Korea
Republic of the Marshall Islands
Republic of Palau
Republic of Singapore
Solomon Islands
Taiwan
Thailand
Tonga
Tuvalu
United States of America
Vanuatu

Where **US-AEP** works



Eligibility for US government funding for some countries and territories may be subject to certain limitations.

People from the organizations listed on the cover of this report participated in US-AEP activities—representative list 1994

- 1 -

A **letter** from the Administrator of the
United States Agency for International Development

April 1995

Dear US-AEP Partners and Friends:

I am pleased to transmit the Annual Report of the United States-Asia Environmental Partnership, US-AEP, which demonstrates that foreign assistance achieves sustainable development goals abroad while serving economic interests at home. The Agency for International Development (USAID) designed and proudly leads this exciting endeavor, now completing its second year of operations. Through US-AEP, Asians, Pacific Islanders, and Americans work together to address pressing environmental needs and to foster the application of the United States' wealth of environmental experience, technology, and practice.

The US-AEP public-private partnership involves 25 US government agencies, the US states, more than 3,000 private sector companies, and many nongovernmental organizations (NGOs) and their counterparts in the Asia-Pacific region. This interagency collaboration is breaking important new ground in jointly targeting and programming resources for practical, measurable results.

US-AEP resources have already facilitated the transfer of US environmental technology valued at approximately \$420 million to Asia and the Pacific through the private sector. The result? Environmental improvement in Asia, but with vital global impact, jobs in the United States and in Asia, and more sustainable development for us all.

This is a valuable beginning—but only a beginning. As this report confirms, US-AEP promotes environmental and economic benefits in ever-widening circles of Asian, Pacific Island, and American stakeholders actively working to protect our common future.

Sincerely,



J. Brian Alwood

at a glance

US-AEP matches Asian environmental needs with US environmental experience, technology, and practice.

- Individual activities seek practical solutions to local problems.
- Cumulative efforts positively affect global environmental issues.
- Partnership, leveraging, and synergy among activities drive strategies and strengthen programs and environmental impact.

Organization

ten-year initiative begun in 1992
works with 35 Asia/Pacific nations and territories partners with

- 25 US federal departments and agencies
- state and local entities
- environmental businesses
- nongovernmental organizations
- Asian counterparts

receives USAID core funding
leverages cash/in-kind contributions from partners

Activities focus on

stemming biodiversity loss
controlling and preventing industrial pollution
assisting in the development of urban environmental infrastructure
improving energy efficiency and the use of renewable energy technologies

Implementation strategies include

developing networks and long-term relationships
stimulating direct technology transfer
creating innovative financial access
disseminating information

Mutually beneficial consequences 1992–94

850 Asians and Americans participated in training, exchanges, and fellowships matching Asia's environmental problems with the appropriate US environmental experience, technology, and practice to solve them.

Over 1,100 trade leads generated by US-AEP technology representatives in Asia have been matched with the more than 3,000 US environmental firms in US-AEP's expanding Environmental Technology Network for Asia data base.

Approximately \$420 million worth of US private sector environmental equipment and services have been transferred to Asian public and private sectors.

—\$234 million resulted from 104 US-AEP environmental/energy technology fund matching grants, which took small- and medium-sized firms to Asia.

—\$186 million generated by environmental trade leads, exchanges, fellowships, training, and other US-AEP initiatives combined.

Over 3,400 US jobs were created.

United States-Asia Environmental Partnership led by

the United States Agency for International Development

is a **catalyst** for practical public-private initiatives
to **sustain development**
and **protect the environment.**

The United States-Asia Environmental Partnership (US-AEP) embodies a challenging premise: balancing environmental conservation and economic development is essential and achievable. As a catalyst for practical trans-Pacific initiatives to sustain development and protect the environment by applying US environmental experience, technology, and practice, US-AEP's range of activities precipitate action that benefits Asians, Pacific Islanders, and Americans alike.

Led by the United States Agency for International Development (USAID), US-AEP was established in 1992 as a ten-year effort. This annual report highlights US-AEP's second fully operational year, showcasing specific achievements during calendar year 1994 and the

fruition of activities begun earlier and describing the individual activities that produced them. The report also has broader applicability as a case-study-in-progress of an effective approach to leveraging US and Asian public, private, and nongovernmental sector resources to deal with critical environmental issues.

US-AEP initiatives further US cooperation with developing and newly industrializing nations and territories of Asia and the Pacific in addressing their pressing environmental concerns. Partnerships among the public, private, and nongovernmental sectors in the United States and Asia animate that cooperation. The partnerships, in turn, benefit from collaboration among 25 US federal departments and agencies with programs that

address environmental concerns. Indeed, these carefully conceived US-AEP collaborative efforts constitute an important breakthrough in creative ways of achieving common purpose and reinventing government.

US-AEP activities respond to Asia's complex and diverse environmental, developmental, and technological needs. Based on these demonstrated needs, US-AEP focuses on:

- ◆ stemming biodiversity loss,
- ◆ controlling and preventing industrial pollution,
- ◆ assisting in the development of urban environmental infrastructure, and
- ◆ improving energy efficiency and the use of renewable energy technologies.

US-AEP uses the **marketplace** as
 a **long-term development tool**
 and **means of technology transfer.**

US-AEP uses the marketplace as a long-term development tool and means of technology transfer. Asia's rapid pace of economic growth, urbanization, industrial expansion, and energy consumption generates not only the region's environmental problems but also its demand for solutions. Most US environmental goods and services that meet Asian needs are from the private sector. US-AEP's activities, therefore, are designed to bring trans-Pacific players together and help create a self-sustaining marketplace of environmental demand and supply. This marketplace, in turn, guarantees a flow of ideas, hardware, and software for Asians to use in solving their environmental problems and augurs economic growth for Americans.

US-AEP already reflects the Clinton Administration's national export strategy, which highlights environmental technology because it alleviates global problems and benefits business. When President Clinton articulated this strategy for business leaders in Jakarta,

following the November 1994 Asia Pacific Economic Cooperation (APEC) forum meeting, two technologies that the event showcased had been introduced to Indonesia through US-AEP activities. The White House Conference on Environmental Technology in December, which focused on international environmental issues, presented US-AEP as a resource.

US-AEP activities also identify, engage, and mobilize a rapidly evolving, geographically dispersed US "environmental industry" that is only now seeing itself in global terms and as a collective commercial sector. Frequently, encouraging these mainly small- to medium-sized firms to commit to Asia takes thoughtful education.

Individual activities under the US-AEP umbrella are carried out by different organizations to fulfill distinct purposes. All seek, however, to develop networks and long-term relationships, stimulate direct technology transfer, create innovative means of financial

access, and disseminate information. Individual activities do not function in isolation, as the case studies that follow demonstrate. US-AEP fosters synergies among activities, participants, and implementors to leverage its programmatic and environmental impact. In the same way, cash and in-kind contributions by all of the partners in US-AEP activities leverage the program's resources.

Institutionally, US-AEP enlarged its Asian presence during 1994. The Regional Field Office, coordinating operations, is open in the Philippines. Offices of Technology Cooperation flourish in nine Asian countries. A US-AEP technical liaison is attached to USAID/Sri Lanka. Urban Infrastructure Offices in Indonesia and Thailand track major water and wastewater projects. A US-AEP environmental specialist is assigned to the Asian Development Bank in Manila. The Biodiversity Conservation Network maintains its regional office in the Philippines. USAID's ASEAN Environmental Improvement

Project, integrated as a US-AEP work element, has staff in many Southeast Asian nations

What have these US-AEP efforts achieved? During the past two years, 850 Asian and American professionals have explored the region's many environmental problems and the US laws, regulations, technologies, strategies, and management practices that best ameliorate or prevent those problems through environmental business exchanges, fellowships, and short-term training.

Consequently, new legal instruments and industrial practices as well as sales, joint ventures, and licensing of technology are transferring these methods to Asia. Efforts are under way to conserve biodiversity in an aggregate area of about 2,497 square miles in six specific sites around the region and, in doing so, to improve the quality of life for over 200,000 inhabitants.

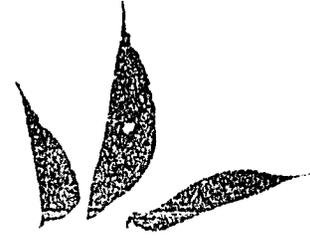
American workers, businesses, and environmental professionals have benefited as their jobs, revenues, and technical

opportunities have expanded. More than 1,100 trade leads generated by US-AEP technology representatives in Asia have been matched with the more than 3,000 US environmental firms in US-AEP's Environmental Technology Network for Asia data base. Preliminary data indicate that US-AEP resources have helped the US private sector to transfer US environmental equipment and services worth approximately \$420 million to public and private sector interests in Asia at a US-AEP expenditure of US taxpayer dollars of just under \$44 million. As a result, over 3,400 jobs have been created in the US environmental sector, based on estimates that \$122,000 in sales supports each job.

US-AEP is extending its emphasis. The US industrial sector's concern for environmental quality is rapidly moving "beyond compliance" from reactive control and remediation strategies to proactive environmental management. These trends emphasize "win-win" opportunities

for business and the environment: waste minimization, pollution prevention, cleaner technologies, and total quality environmental management. Such approaches substantially advance the state-of-the-environmental art beyond "end of pipe" cleanup of industrial waste and tackle fundamental threats to environmental well-being. They are especially appropriate in Asia. World Bank statistics suggest that the bulk of the industrial base that will exist in Asia in 2010 has *not yet been built*. Promoting "cleaner technologies," therefore, offers profound environmental benefits and enormous investment opportunity. These developments plus the implications of environmentalism's "third wave," focused on risk analysis, market-based incentives, and cooperation between environmentalists and industry, provide the basis for initiatives on US-AEP's drawing board.

Thus, as 1994 came to a close, US-AEP had matured as a catalyst for practical programs uniting people from the United States and Asia to work jointly toward a cleaner, more sustainable, mutually supportive future. The stage is set for an even more productive 1995.



US-AEP activities focus on **stemming biodiversity loss**, controlling and preventing industrial pollution, assisting in the development of urban environmental infrastructure, and improving energy efficiency and the use of renewable energy technologies.

Why? Asia/Pacific context:

- ◆ *highest mountain system*
- ◆ *second largest rain forest complex*
- ◆ *over half the world's coral reefs*
- ◆ *tens of thousands of diverse island systems*
- ◆ *immense species diversity and locally unique species*
- ◆ *40 percent of the earth's surface*
- ◆ *over half the world's people*
- ◆ *rapidly increasing populations (by 60 million annually)*
- ◆ *more poverty-stricken Asians than Africans and Latin Americans combined*

*South and Southeast Asia together have **already lost** about*

- ◆ *67 percent of original wildlife habitat*
- ◆ *two-thirds of forest areas*
- ◆ *over half of wetlands, mangroves, and grasslands*

to agriculture, human settlement, poaching, hunting, collection of plants, urban and industrial development, pollution, logging, and draining and filling wetlands.

◆ Palawan has among the largest remaining primary rain forests and the most intact and diverse coral reef systems in the Philippines. The abundance of unique flora and fauna account for a significant portion of the nation's entire biological resources. The territories, natural resources, and cultures of the island's indigenous communities are increasingly threatened by mining activities, destructive legal and illegal logging and fishing practices, and the rapid encroachment of migrants from neighboring islands.

Three nongovernmental organizations (NGOs) have collaborated to improve the well-being of the island's indigenous communities. These are Nagkakaisang mga Tribu ng Palawan (NATRIPAL), an association of 47 groups representing a majority of the indigenous cultural communities in Palawan; Tribal Filipino Apostolate, an NGO assisting indigenous peoples in the Philippines; and Tanggapan ng Panligal ng Katutubong Pilipino, a legal advocacy organization.

The NGOs help the communities gain greater control over their lands and resources and raise their incomes, particularly through the sale of nontimber forest products. Overharvesting of these products seriously threatens the environment and the ability of indigenous people to earn sustainable incomes.

A US-AEP/Biodiversity Conservation Network implementation grant funds World Wildlife Fund (WWF)-Philippines to assist NATRIPAL and its partners in obtaining the most binding certification of ancestral land rights currently available in the Philippines for two pilot project sites. Additionally, the grant supports the establishment of a credit program and a marketing service unit to help indigenous communities in the pilot sites gain more sustainable benefits from the sale of nontimber forest products, beginning with rattan, almaciga resin, and honey.

The region is expected to lose a higher proportion of its species than any other part of the world over the next quarter century. The challenge is to reconcile people's needs with national and global interests in conservation.

◆ In transition from a planned economy, Mongolia is establishing the legal framework for environmental protection. Mongolia is home to many unique species of animals, among them the famed bighorn sheep, much prized by game hunters. To protect these and other species, Deputy Director A. Enkhbat of Mongolia's Ministry for Nature and the Environment spent three months revising and drafting Mongolia's current environmental laws with emphasis on those pertaining to species preservation. He worked with the broad network of environmental attorneys at Environmental Law Alliance Worldwide (E-LAW), a Eugene, Oregon-based NGO, during a US-AFP/Asia Foundation environmental fellowship. An earlier fellowship sent an American lawyer from Oregon, who has been an advisor to E-LAW, to Mongolia to assist in drafting basic environmental law.

◆ Conservation International and its Papua New Guinea-based collaborators—Foundation for the Peoples of the South Pacific and the Wau Ecology Institute—are investigating the establishment of landowner-operated "research tourism" and adventure tourism enterprises in the Lakekamu-Kunamaipa Basin. Using a biodiversity conservation planning grant, they are designing a locally managed, rain forest research center for training in studies of ecology, wildlife, and human-forest interactions; organizing a test run of an eight-day bush trek, and assisting in developing a long-term environmental management plan for the basin.

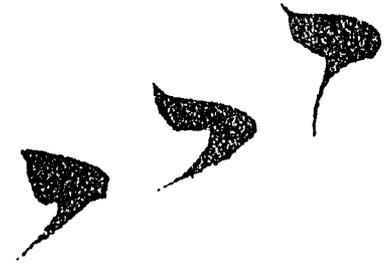
◆ Tigers, rhinoceroses, and even certain orchids are among the beneficiaries of renewed efforts to stem trade in endangered species in Asia. US-AEP and the US Department of the Interior's Fish & Wildlife Service (FWS) are collaborating to strengthen implementation of the Convention on International Trade in Endangered Species (CITES) in Asia. Together with the Animal and Plant Health Inspection Service (APHIS) of the US Department of Agriculture and TRAFFIC International (a program of WWF), they invited government representatives from Bangladesh, India, Indonesia, Nepal, and Philippines to participate in CITES implementation training. A US-AEP/World Environment Center environmental business exchange brought officials from the five countries on a study tour of the ports of Los Angeles and San Francisco and the

National Wildlife Forensics Laboratory in Ashland, Oregon. The Asian wildlife inspectors were introduced to US procedures on inspection permits and to resources for endangered species identification.

◆ Hong Kong, like other densely populated urban areas, faces loss of its local ecosystems. To help repair the destruction, K. K. Chan, an environmental scientist from a firm specializing in the restoration of landfills and a committee member of the Hong Kong Environment Center—an NGO concentrating on biodiversity issues—spent two months in the United States affiliated with the National Heritage Program at The Nature Conservancy. During his environmental fellowship, he also spent time with The World Conservation Union (IUCN) and the Sierra Club. He gained firsthand experience of US strategies, plans, and programs for biodiversity conservation and rehabilitating damaged ecosystems, particularly landfill restoration. As a result of his fellowship, Mr. Chan hopes to introduce a data base on biodiversity to Hong Kong.

◆ Washington State Senator Karen Fraser played a key staff role in preparing for and serving as the US delegate to the Second East Asia and Pacific Parliamentarians' Conference on Environment and Development in Phuket, Thailand, a follow-up to the Rio Earth Summit by regional parliamentarians. Discussions covered climate change, biodiversity, interrelationships between trade and environmental policies, public-private partnerships, development of improved legal instruments, and strengthening of legislative institutions to address these urgent issues more effectively. During her six-week environmental fellowship, Senator Fraser helped draft the Phuket Declaration, which reaffirmed a common commitment to Agenda 21 and to cooperatively addressing regional environmental and development concerns.

Through the fellowship and related Asian experiences, Senator Fraser has seen firsthand the great need for US environmental technology and the expanding markets for US environmental services in Asia. She has used this perspective to advocate state-level public policies designed to increase effective participation of state environmental and infrastructure businesses in Asian countries.



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 energy technologies.

Why? Asia/Pacific context:

East Asia's industrial sector grew 900 percent between 1965 and 1990. The region's export-oriented economies include:

- ◆ food processing, electronics, textiles, steel, cement, and heavy industries
- ◆ small to medium suppliers to multinationals
- ◆ large national industries (oil, gas, steel)

The region's total industrial pollution load has grown exponentially.

Environmental consequences include: contaminated water resources, including groundwater, unacceptable levels of air pollution, and unsafe handling and disposal of toxic substances.

- ◆ Over half the rivers monitored are becoming saturated with biochemical oxygen demand (BOD) and chemical oxygen demand (COD) compounds and, therefore, are dying.
- ◆ In Manila, over 100 industries dump more than 20 gallons of untreated or partially treated effluent per minute—11 million gallons per year—into the Pasig River.
- ◆ In Bangkok, industry emits about 21 percent of total suspended particulates. Levels are even higher in smaller industrial centers close to raw materials and fuel sources.
- ◆ In Indonesia, new industrial investment made between 1995 and 2010 will account for 85 percent of total capacity.
- ◆ In Kuala Lumpur, Malaysia, 27 large-scale commercial development projects were under way simultaneously.

Most industries are in expanding urban areas.

Negative: high pollution levels

Positive: concentrated pollution is potentially addressed more cost effectively.

◆ Thomas McNabb was front and center at the Jakarta Convention Center when President Clinton outlined his export strategy to business leaders and government officials from Indonesia and the United States in November following the APEC meetings. Mr. McNabb, president of Aquatics Unlimited International Equipment Corporation of Martinez, California, and recipient of a US-AEP/National Association of State Development Agencies (NASDA) environmental/energy technology fund matching grant, was chosen to participate in the event as an example of US environmental entrepreneurship.

Aquatics Unlimited had signed a \$10 million agreement with the Indonesian government-affiliated PT Amarta Karya to provide aquatic weed harvesters for use in cleaning up major waterways in Jakarta and elsewhere. Mr. McNabb expects to create at least 200 new US jobs over the ten-year contract.

Mr. McNabb credited his firm's success in Indonesia to contact with the US-AEP/Indonesia technology

representative. Citing the US Department of Commerce offices, US Trade Development Agency (TDA), US Ex-Im Bank (EXIM), California Export Development Agency, California Environmental Protection Agency, and Clinton administration for programs that support small businesses, Mr. McNabb said, "It is now up to us, the business community, to make use of these various agencies to create jobs at home and to help the region deal with their environmental cleanup and pollution reduction requirements."

◆ The Bacnotan Steel Corporation (BSC) in the Philippines exemplifies the difference that a committed management and a broadly supportive workforce can make in spreading the benefits of pollution prevention and total quality environmental management. The facility manufactures 50,000 metric tons of steel and galvanized iron sheets a year and generates polluting waste in the process. A waste reduction assessment conducted by a US-AEP/ASEAN

Rapid industrialization will continue to be the driving force behind the region's economic growth. The challenge is to reduce pollution levels by introducing cleaner production technologies as well as more effective cleanup methods, keeping pace with industrialization.

Environmental Improvement Project (EIP) team found a range of problems, including odor and fumes emanating from the plant's zinc bath kettle and improperly stored and disposed of solid wastes.

In response to the waste reduction assessment, BSC has purchased a special flux substitute to successfully eliminate the odor of ammonium chloride emanating from the zinc bath kettle, avoiding anticipated complaints from the neighboring community. Introducing pollution prevention measures has resulted in \$25,000 annual savings in operating costs, reduced scrap and wastes, increased company efficiency and productivity, and produced more lustrous iron sheets and generally better quality products. Some recommendations are being implemented because of the company's

concern for the environment, even when the options do not directly save the company money. But these measures provide cleaner surroundings, avoid penalties, enable the company to easily comply with government standards, and enhance its public image.

◆ Increased pollution from the growth in shipping in Southeast Asia (in turn a result of increased export-oriented industrialization in the region and beyond) is jeopardizing the fishing and tourism industries that provide food and income for local inhabitants. The US-AEP/Overseas Private Investment Corporation (OPIC) environmental enterprise development initiative awarded \$97,000 to the International Response Corporation (IRC) of New York to explore the commercial possibilities of developing facilities in Malaysia and Indonesia to receive and reprocess waste oil from ships. The facilities will recycle waste into reusable material. OPIC President Ruth Harkin expects that the port facilities will help the marine environment of both countries, while providing an attractive venture for US business.

◆ Hazardous waste in Korea will be cleaned up in part because IT Corporation, Knoxville, Tennessee, has won three contracts there. A US-AEP/Infrastructure Finance Advisory Service (IFAS) client, IT was selected by Halla Engineering & Construction Corporation of Korea to serve as technology supplier and engineering partner for an integrated industrial and hazardous waste management facility. The facility, which has a total estimated value of \$20-25 million, will be located in Kyung-Ju in southeastern Korea, about 100 miles from Ulsan. TDA authorized a \$90,000 technical assistance grant to support operator training for the facility. The total value of the IT Corporation award is expected to

exceed \$3.5 million, of which over 95 percent will be supplied from the United States. The firm has also been awarded environmental projects by Yukong Limited and Seagate Asia. IT Corporation strengthened its contact with the Ulsan area by hosting two presidents and the administrative manager of the Ulsan Environment Development Corporation when they visited the United States on an environmental business exchange under the auspices of US-AEP and the World Environment Center (WEC). "That IT has now made a significant entry into the Korean market for environmental management reflects directly on the consistent and high-energy support that IT has received from US-AEP and its associates at IFAS, WEC, and most recently, TDA," Alan Baker, IT business development manager, wrote to US-AEP. As a further spinoff, IT will be participating in a US-AEP-sponsored United States Environmental Training Institute (USETI) regional course to take place in Seoul.

◆ Hong Kong relies heavily on air conditioning and refrigeration. To reduce the resulting pollution level, Major Diversities Incorporated of Arvadia, Colorado, trained 30 Hong Kong officials in chlorofluorocarbon (CFC) recovery and recycling as part of an environmental/energy technology grant sponsored by the Colorado International Trade Office. The officials, in turn, will train over 300 others. Major Diversities also provided laboratory analysis of recovered gas and compressor oil to determine metal chloride/fluoride contaminant levels. An accurate history of these levels makes it possible to determine the mechanical integrity of refrigeration equipment. Because of this initial contact, Major Diversities anticipates successfully concluding agreements with potential partners.

◆ Thailand's increased awareness of the dangers of medical waste has led to a joint effort by the government and hospitals to establish national standards for the definition and regulation of medical waste. A task force representing the Thai Ministries of Public Health and of Science and Technology, USAID, hospitals, and others involved in managing medical waste evaluated privatizing the handling of medical waste. Responding to Thailand's needs, USETI, in cooperation with the Kenan Institute, designed two courses focusing on waste treatment and disposal, regulations and standards, worker safety and training, and waste stream audits and waste minimization. The courses—carried out in Thailand as part of US-AEP's environmental short-term training—focused on the roles industry, government, and NGOs play in successfully implementing long-term strategies for managing medical waste.

Supporters of the program included Browning-Ferris Industries (BFI), Medical SafeTEC, Envirotech Enterprises, EnviroSearch International, the Federation of Thai Industries, and a committee of Thai government and hospital representatives who assisted in planning and coordinating the course. Relationships established between the public and private sector Thai participants and the US medical waste management companies resulted in the sale of an autoclave to Siriraj Hospital in Bangkok and the donation of a microwave to the Ministry of Public Health.

After the course, the Thai alumni delivered follow-up waste management training courses to the wider professional community. The Ministry of Public Health has approached USETI about conducting additional training to continue the focus on the importance of proper management of medical waste.



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Why? Asia/Pacific context:

Dramatic demographic shift: the urban population will triple between 1990 and 2025.

- ◆ *In 1990 one Asian in three lived in towns and cities.*
- ◆ *By 2025 six in ten Asians will, as many people as live in Asia today.*

Asia has 87 cities with more than 1 million people; 38 are in China; 23 are in India.

Megacities—more than 8 million people—are growing rapidly in size and number.

- ◆ *In 1950 none existed in Asia.*
- ◆ *In 1990 nine made up half the world's megacities.*
- ◆ *In 2000, 13 will comprise half the world's megacities.*
- ◆ *Bombay, Calcutta, and Shanghai each have more than 15 million inhabitants.*

Most serious urban environmental problems

- ◆ *Solid waste management*
- ◆ *Inappropriate land use*
- ◆ *Water:*
 - Issues of quality and concerns about supply.*
 - Pollution is most pervasive environmental problem.*
 - Cities cause most pollution.*
 - Domestic sewage is compounded by industrial wastes.*
 - Groundwater pollution is caused by industrial wastes and salination from overpumping.*
- ◆ *Air quality*
 - Air pollution worsening in virtually all Asian cities, except perhaps in Korea.*
 - Worldwide, Asia has*
 - 12 of 15 cities with the highest levels of particulate matter.*
 - 6 of 15 cities with the highest levels of sulfur dioxide.*
 - Beijing, Calcutta, Jakarta, New Delhi, and Shenyang are among the seven cities worldwide with the worst air pollution.*

◆ The Neihu section of Taipei, Taiwan, will enjoy a US-designed wastewater system because CH2M Hill was persistent in developing long-term working relationships in Taiwan. The US environmental firm won the much-sought-after consulting contract, defeating Taiwanese and European competitors. CH2M Hill will subcontract to a local engineering company, CTCI. The CH2M Hill country manager reported that activities by the American Institute in Taiwan (AIT) Commercial Section and US-AEP provided an introduction to Taiwan Environmental Protection Administration (EPA) leaders and have been invaluable to his company's success on the island. CH2M Hill built on these relationships by hosting the Hawaii stop of the US-AEP environmental business exchange for ten county-level officials of the Taiwan EPA. In addition to regular advocacy and counseling from AIT, the firm benefited from two previous US-AEP events—a June 1993 solid waste seminar and a February 1994 trade mission.

Infrastructure and service needs are unable to keep pace. Water and air pollution issues will require the greatest investment expenditure. The challenge, in light of severe public capital constraints, is to increase the development of cost-effective, environmentally sound infrastructure through new mechanisms for private financing and ownership arrangements that share risks among governments, municipalities, and private companies.

◆ Like all of urban Asia, Singapore, an island city-state, must upgrade existing sewage infrastructure as well as build new facilities. Major improvements and additions will be made to the Seletar sewage treatment works in Singapore by Peter Moleux, P. E. & Associates, an engineering firm from Massachusetts. The company won a \$100,000 contract for design consulting/engineering services from Singapore's Ministry of the Environment as a result of US-AEP/Singapore and US-AEP/Environmental Technology Network for Asia (ETNA) teamwork. "Without your assistance, I could not have made this contact. . . I hope to continue to build upon these relationships," Mr. Moleux wrote ETNA.

◆ Currently, only 22 percent of Jakarta households have direct access to piped water. Montgomery-Watson of Pasadena, California, has been selected to help ease piped water shortages in Jakarta, Indonesia. The firm, an active participant in the US-AEP/USAID Housing Guaranty/Jakarta program, will prepare detailed technical and financial feasibility studies for a two-zone water distribution system concession. As a member of the private sector consortium chosen by the Jakarta Water Authority to negotiate the concession, Montgomery-Watson will develop plans to reduce nonrevenue water while increasing near-term supply and design modifications and an expansion of the primary and secondary distribution systems needed to bring water to areas suffering from the most acute piped water shortages.

◆ China Light & Power (CL&P) has signed a purchase agreement for \$450,000 with Specialty Vehicle Manufacturing of California for one electric bus. US-AEP/Hong Kong facilitated the process by setting up a visit in the United States for CL&P management through an environmental business exchange. This is one of many US-AEP ventures to introduce electric vehicles to Asian cities to improve transportation infrastructure and lower the levels of air pollution. Electric-powered *tuk-tuks* to replace the ubiquitous fossil-fueled, three-wheeled vehicles are being manufactured in Bangkok by a joint venture between Pholasith Tuk-Tuk Company and Advanced Electric Car Technology of California. An environmental business exchange facilitated the process.

In Nepal, the Global Resources Institute (GRI) converted a diesel-powered *tempo* (the Nepali equivalent of the *tuk-tuk*) to electricity and trained six Nepalese mechanics in electric conversion, facilitated by an environmental/energy technology fund matching grant. GRI then received a grant from USAID/Nepal to convert ten more *tempos* and put them in commercial operation for a six-month trial period, create a prototype battery utility to service the vehicles, and help plan and promote electric transportation in Kathmandu.

Zap Power Systems, in cooperation with the California EPA, has been awarded an environmental/energy technology fund grant to demonstrate its electric power pack for bicycles and seek outlets in Malaysia, Thailand, and Singapore. The power pack offers a clean alternative to hydrocarbon, nitrogen oxide, and carbon monoxide emissions from motor scooters and cars.

◆ China Light & Power awarded a \$500,000 contract to Black & Veatch of Missouri to design a power plant wastewater treatment system following a trade lead developed by US-AEP's Hong Kong technology representative and disseminated by US-AEP/ETNA. The system will be used to treat toxic metals that develop in the effluent during the plant cooling process.

◆ A sister city relationship between Seattle, Washington, and Surabaya, Indonesia, has borne fruit in many ways that improve water project planning efforts in that major East Java port city. In May 1993 Nina Widiyanto of the Surabaya Water Supply Enterprises traveled to the United States to take a US-AEP/USSETI course on industrial and municipal waste and wastewater treatment followed by an environmental fellowship with two Seattle departments involved in water resources and sewage treatment. As a follow-up fellowship, expert Sylvia Cavazos, assistant to the superintendent of the Seattle Water Department, was dispatched to Indonesia to assist the Surabaya water authority. Ms. Cavazos helped shape three key areas of Surabaya water operations: strategic planning methodology, reducing unaccounted-for water, and institutional capability for demand forecasting. The Seattle and Surabaya water authorities are planning an ongoing exchange of information and support. In a separate collaboration by US-AEP/Indonesia's urban infrastructure representative and USAID/Jakarta, the Seattle Water Authority finance director traveled to Surabaya via USAID's municipal finance project to work with the Surabaya water authority in developing a municipal bond program.

US-AEP activities focus on stemming biodiversity loss,
controlling and preventing industrial pollution, assisting in the
development of urban environmental infrastructure, and

improving energy efficiency and the use of renewable energy technologies.



Why? Asia/Pacific context:

Extremely rapid growth in demand for energy

- ◆ doubling every 12 years in Asia, versus 28 years globally

Demand for electricity is growing even faster.

- ◆ in newly industrializing countries, 10–25 percent per year, two to three times growth in GDP
- ◆ in most of South America, 10 percent per year, up to two times faster than in industrialized countries

Electricity represents 30 percent of Asia's energy consumption.

- ◆ Huge investment to keep up with demand—nearly \$300 billion during 1990s

China and India use most of the energy produced commercially in Asia.

- ◆ China consumes 61 percent of all of Asia's production.
- ◆ India consumes 20 percent of all of Asia's production.

Energy and power use are distributed differently.

- ◆ Industry: two-thirds of commercial energy use in China, one-half in India
- ◆ Transport: 5 percent of energy used in China, 25 percent in India, more than 50 percent in Sri Lanka and Thailand

Coal is the dominant source of energy, followed by liquid fuels, biomass, primary sources, and natural gas.

The scale of many of Asia's power sector investments are orders of magnitude greater than most industrial investments (hundreds of millions of dollars as compared with millions).

New power investment planned in Asia during 1990s

- ◆ two-thirds of all power investment in the developing world
- ◆ power-related investments would double sector's capacity by the year 2000.

Environmental impacts will last well into next century.

- ◆ This is a direct result of high growth and high dependence on coal.
- ◆ Coal-based energy sector adds significantly to global climate change, greenhouse gases, acid rain, and other pollution problems.
- ◆ Increase in fossil fuel-related emissions in Asia will more than offset any reductions in emissions achieved in OECD countries.
- ◆ SO₂ emissions in Asia will surpass—*all of Europe by 2000.*
—*Europe and the United States combined by 2005.*
- ◆ CO₂ emissions from fossil fuels will catch up with OECD countries by 2015.

◆ High-tech jobs may go back to economically depressed Lowell, Massachusetts. Solar Resources of Lowell traveled to the Central Visayas in the Philippines to install a photovoltaic (PV) system demonstration project in Negros Oriental and to lay the groundwork for a comprehensive PV system proposed to the Philippine Department of Tourism. As a result of the project, a factory in Lowell will be spared from closing. Workers laid off by earlier plant closures in the city will be back to work producing solar panels. The “win-win” project—sponsored by the University of Massachusetts, Center for Industrial Competitiveness, through an environmental/energy technology fund matching grant—benefits the US environmental business, the University of Massachusetts, and American workers. The project also marks a step toward introducing renewable energy technologies on a large scale, developing a profitable local industry in the Philippines, and establishing a distribution network in the Visayas region.

By any measure, the growing energy and power sectors in Asia are among the most crucial areas to address—in terms of both economic growth and potential negative environmental impact—in the region's next phase of development. The challenge is to provide affordable, reliable, and clean energy services. New solutions must be developed, particularly those that attract private technology and capital in areas such as clean coal technology, renewable energy, and energy efficiency.

◆ India is one of the world's largest coal producers. Production has increased more than 6 percent a year for the last decade and is expected to rise further by 1997. Enormous estimated reserves make coal the fuel of choice for the foreseeable future. Indian coal, however, has an extremely high ash content—between 40–50 percent—which causes a broad range of problems. Consequently, the Government of India is promoting private coal preparation projects on a build-own-operate (BOO) basis. The result is an important opportunity for India and for US coal preparation firms.

In response, US Secretary of Energy Hazel O'Leary and US-AEP Director General Lewis P. Reade announced an Indo-US coal preparation program to promote private coal-washing facilities during the secretary's first mission to India in July. The announcement was part of a larger Protocol of Intent to cooperate in deploying clean coal technologies signed between the US Department of Energy (DOE) and India's Ministries of Coal and Power.

With support from the US-AEP/DOE coal preparation project, Norwest Mine Services of Salt Lake City, Utah, has established a joint venture to provide consulting and engineering services to India's expanding coal-mining industry. The new company, RPG/Norwest Mine Services, will be based in Calcutta. Calcutta Electric Service owns 40 percent, the Indian firm, RPG Industries, owns 20 percent, and Norwest owns 40 percent of the new company.

◆ Alarming levels of sulfur dioxide emissions from a coal-fired power plant in Mae Moh in northern Thailand prompted the Thai government to request a site visit from a US-AEP/Environmental Protection Agency (EPA) action team in 1993. Severe health effects had been reported near the plant, which provides 27 percent of the country's

electrical power. The action team collaborated with experts from the Thai Ministry of Health and Ministry of Science, Technology, and Environment, and the Electrical Generation Authority of Thailand.

As follow-up: a representative of the Radian Corporation went on an environmental business exchange to Thailand to assist the Pollution Control Department of the Ministry of Science, Technology, and Environment in planning a nationwide air quality-monitoring network. Thai environmental engineers reviewed health effects research within the United States as part of a US-AEP environmental fellowship hosted by EPA. A joint EPA-National Oceanic and Atmospheric Administration mission initiated an extensive air-monitoring and -modeling study at the plant. The Royal Thai Government has invested \$200,000 in US monitoring equipment and laboratory fees for this program and deems the study critical to developing pollution control standards in Thailand. Air and Water Technologies has signed a letter of intent on flue-gas desulfurization retrofit for eight of the power-generating units, a result of participating in air pollution control technology courses organized in 1993 and 1994 by US-AEP/USETI. Sargent and Lundy won a \$500,000 contract to provide computer modeling for four units; Radian has signed contracts resulting from their earlier effort.

◆ A victory for a cleaner Manila, Philippines, and increased energy capacity are the results of a major waste-to-energy project that a Kentucky-based environmental project developer will implement for the Metro Manila Authority (MMA). Under a Memorandum of Understanding and following the Philippine's new build-own-and-transfer (BOT) guidelines, the US developer will build, own, and eventually transfer the facility to the MMA. The facility will use

technology developed by the Tennessee Valley Authority that converts municipal solid waste into ethanol and other light chemicals. The residual from this process is used to fire a pressurized fluidized bed combustion (PFBC) boiler to generate electricity and process steam. Efforts started as an environmental business exchange assisted by US-AEP's IFAS, which arranged for a Philippine government delegation to tour US waste-to-energy plants and meet their US counterparts.

◆ Using an integrated gas turbine system to combine distillery spent wash and sugar mill bagasse will revolutionize power generation in India. Bagasse (sugar cane refuse) will be converted into much-needed energy because of an agreement between Indian and US companies regarding a technology designed to increase power capabilities while decreasing greenhouse gas emissions during sugar processing. The development is nothing short of "a major breakthrough in cogeneration technology," according to USAID/New Delhi, the facilitators of this collaboration, which began with an environmental business exchange. Executives with the Ajinkyatara Cooperative Sugar Factory (ACSF) of Maharashtra went to the United States to explore technologies for biomass gasification using bagasse and concentrated "spent wash" waters from distillery operations. ACSF met with US manufacturers of integrated gas turbine systems, including the Hawaii Natural Energy Institute and Thermo Chem of Baltimore, Maryland. In Washington, D.C., Indian Power Minister N. K. P. Salve and US Energy Secretary Hazel O'Leary witnessed the signing of a Memorandum of Understanding for technology transfer between ACSF and Thermo Chem.

US-AEP activities and implementors

match Asian environmental needs with

US environmental experience, technology, and practice.

◆ **Environmental Action
designed/implemented by the
US Environmental Protection
Agency (EPA)**

Provides government-to-government assistance to Asian and Pacific nations and territories through environmental action teams, short-term technical assistance, and government personnel training. Environmental action teams bring together US environmental experts to undertake short-term assignments that respond to specific environmental problems at the request of Asian governments. Teams are led by experienced EPA staff and may include members from other federal or local government agencies, international organizations, businesses, and NGOs. Findings are shared with US-AEP partners to coordinate appropriate follow-up activities. EPA technical and policy experts are also available for brief focused missions at the request of Asian governments or field personnel. EPA environmental management training modules assist Asian governments in addressing critical environmental issues. Courses cover risk assessment, environmental economics, environmental policy, enforcement, environmental impact assessment, hazardous waste site assessment and

prioritization, environmental audits, and financing environmental investments.

1994: Five action teams, two short-term technical assistance missions, and two environmental training modules took place.

◆ **Environmental Business Exchanges
implemented by the World
Environment Center (WEC)**

Creates opportunities for substantive US-Asian private sector information exchanges. US industry experts travel to Asia to share technologies and expertise with their Asian counterparts. Asian/Pacific professionals travel to the United States to participate in site visits, workshops, and other activities. These exchanges enable Asian industry representatives to draw on US expertise to perform environmental audits, bring small groups of Asian industry officials to meet with their US counterparts to evaluate new and alternative technologies for process control and pollution mitigation, and bring US and Asian industry leaders together to explore challenges posed by environmental concerns and regulations.

1994: Through environmental business exchanges, 149 Asians came to the United States and 51 Americans went to Asia for a two-year program total of 180 Asians and 105 Americans.

◆ **Environmental Fellowships
implemented by The Asia
Foundation (TAF)**

Provides senior-level Asian, Pacific Island, and American professionals with practical work experience that expands their understanding of environmental problems and solutions. The program places these competitively selected environmental professionals in businesses, NGOs, and government agencies in the United States and in the nations and territories of Asia. Fellowships last one to four months. By building human and institutional capacity and developing trans-Pacific environmental networks, these fellowships are an avenue to improving the environment in Asia and to the possibility of applying US environmental experience, technologies, and practice to facilitate that improvement.

1994: Through environmental fellowships, 89 Asians came to the United States and 25 Americans went to Asia, for a two-year program total of 143 Asians and 44 Americans.

◆ **Environmental Short-Term Training
Implemented by the United States
Environmental Training Institute
(USETI)**

Provides public and private sector environmental professionals from Asia with environmental training opportunities in both the United States and the region and provides US business with opportunities to share their knowledge with Asian professionals. Many USETI participants are in a position to influence environmental practices and policy in their countries. The training provides an opportunity to share important US environmental technological advances with professionals from the Asia/Pacific region. Asians also gain an introduction to US policies and regulatory practices. American public and private sector sponsors, conversely, gain exposure to Asian environmental issues. Through exposure to American technology and ideas, the courses present an opportunity for Asians and Americans to develop mutually rewarding professional relationships, some of which lead to business ventures. All USETI participants join an extensive, worldwide alumni network of environmental professionals.

1994: Two hundred and two Asians and Pacific Islanders participated in environmental short-term training, for a two-year program total of 313 participants.

◆ **Asia Environmental Business
Specialist
Implemented by the US Department
of Commerce, Trade Information
Center, Washington, D.C.**

Facilitates environmental improvement in Asia by responding to US firms' inquiries to the Trade Information Center about US government export assistance programs and resources. The Asia environmental business specialist also offers basic information about environmental needs in Asia and the Pacific and referrals to the US-AEP activities that address those needs.

1994: The Asia environmental business specialist was transferred to the staff of the deputy assistant secretary of commerce for environmental technology exports, reinforcing that linkage between the Department of Commerce and US-AEP.

◆ **Environmental/Energy
Technology Fund
Implemented by the National
Association for State Development
Agencies (NASDA)**

Provides grants to facilitate the transfer of environmentally responsible and energy-efficient technologies from the United States to Asia. The objectives are to improve quality of life and environment for Asians and to help stimulate demand for US technologies that results in job growth for Americans. Small- and medium-sized businesses in the environmental/energy sectors that need resources to assist in demand creation in selected countries may be eligible to receive environmental/energy technology fund grants up to a maximum of \$20,000. Grants match from 20 to 50 percent of total project costs and may be used to fund projects in 35 Asian and Pacific Island nations and territories.

1994: In two years, 104 grants have been awarded, generating \$234 million in environmental technology transfers by the US private sector to Asia and the Pacific.

◆ **Environmental Technology Network
for Asia (ETNA)
Designed/Implemented by USAID's
Global Bureau, Center for Trade
and Investment Services (CTIS)**

Disseminates at no charge environmental business opportunity notices received from US-AEP's Asia-based Technology Cooperation offices to US environmental firms. Detailed information, received daily, about new requirements for energy or environmental products and services and infrastructure projects is matched electronically with firms registered with ETNA. To facilitate prompt responses, these trade notices are faxed within 24 hours to US firms that provide the appropriate goods or services. ETNA also works with a vast network of state development agencies, trade associations, and other multiplier organizations for even greater coverage.

1994: A targeted data base of over 3,000 environmental companies and multiplier organizations received 1,157 opportunity notices.

Partnership, leveraging, and synergy among

US-AEP activities and implementors

drive strategies and strengthen programs and their
environmental impact.

◆ **Environmental Technology
Representatives**
*designed/implemented with the US
Department of Commerce, United
States & Foreign Commercial
Service (US&FCS)*

Provides services to assist US firms in introducing responsible environmental products and technologies to decision makers in Asia's public and private sectors. Offices of Technology Cooperation in nine Asian locations—Hong Kong; Bombay, India; Jakarta, Indonesia; Seoul, Korea; Kuala Lumpur, Malaysia; Manila, Philippines; Singapore, Taipei, Taiwan, and Bangkok, Thailand—are staffed by environmental technology representatives who serve as technical officers for their local environmental market. These offices contribute to improving environmental quality in their respective countries, serve as reliable information sources for local businesses

and government entities, alert Asian audiences to relevant technologies being employed successfully in the United States, and identify potential candidates for fellowships, exchanges, and training. The technology representatives actively promote demand for appropriate environmental products and services, develop market intelligence in various environmental sectors for immediate transmittal to the United States, gather technology opportunities pertinent to promoting US environmental products and services, and foster long-term, mutually rewarding relationships within Asian and US business communities.

1994: Generated 1,157 opportunity notices and catalyzed a minimum of \$25,661,175 in US environmental technology transferred to Asia through those opportunity notices, individual business counseling, and organizing meetings between US and Asian firms.

◆ **Environmental Trade Finance
Program: Access to Export Capital
(AXCAP)**
*designed/implemented by the
Bankers Association for Foreign
Trade (BAFT)*

Provides information about international trade finance, methods of payment, and how to locate banks that offer export finance services; expands public and private sources of trade finance for US environmental companies. Cofunded by the US Department of Commerce, AXCAP features a comprehensive data base, which serves as a national catalog of banks involved in trade finance. AXCAP callers are connected to a trade specialist who matches their specific needs with the appropriate information from the data base. AXCAP also maintains a national inventory of services offered by government export credit agencies, as well as information on environmental financiers interested in US exporters.

1994: Matched 18 companies 22 times for a total of \$65 million in environmental transactions in Asia.

◆ **Environmental Enterprises Development Initiative (EEDI)**
designed with/implemented by the US Overseas Private Investment Corporation (OPIC)

Creates opportunities for US environmental enterprises through technology transfer and capital mobilization. The initiative provides grant funds to help US firms undertake pre-investment activities. OPIC and US-AEP seek to stimulate investment by US environmental firms in Asia's rapidly expanding markets for environmental technology, services, and products. The initiative provides qualified US investors with funding assistance to conduct market-entry assessments, business plans, technology checks, investor reviews, prototype or pilot project implementation, and other pre-investment analyses. OPIC's maximum participation is limited to \$100,000 per project, with the US sponsor required to contribute at least 50 percent (25 percent for small businesses) of the cost. Fifty percent of the sponsor's contribution must be in cash.

1994: Several hundred inquiries and five proposals were received since EEDI was initiated in March 1994. One grant has been awarded, others are in the pipeline.

◆ **Infrastructure Finance Advisory Service (IFAS)**
Implemented under contract with K&M Engineering and Consulting Corporation

Provides information and advisory services to US firms interested in pursuing environmental and energy infrastructure projects in Asia and analyzes projects in Asia to assess appropriate project finance sources. IFAS is a cooperative effort of USAID, EXIM, OPIC, the TDA, and the US Small Business Administration (SBA). For Asia, IFAS focuses on providing energy and environmental project information, identifying US government technical resources to enhance the competitiveness of US companies bidding for energy and infrastructure projects in Asia, and helping to identify and evaluate US government and commercial sources of finance. IFAS serves US equipment manufacturers, contractors, project developers, and service providers that are interested in bidding on public tenders, developing private build-own-operate (BOO) or build-operate-transfer (BOT) projects, or establishing joint ventures.

1994: IFAS is facilitating long-term projects, for example, assisting a US incinerator company in moving several proposals forward in Korea, arranging environmental business exchanges that support study teams examining hydrogen sulfide deposits related to a Philippine geothermal energy project, and aiding discussions among a US developer, Korean municipal government officials, and US financing agencies for a proposed wastewater treatment facility.

◆ **Urban Environmental Infrastructure Program**
Implemented with USAID's Global Bureau, Office of Environment and Urban Development, and the USAID Missions in Indonesia and Thailand

Facilitates the development of urban environmental infrastructure and promotes an emerging public/private partnership in the delivery of municipal services. The program encourages significant US participation in the construction, operation, and delivery of municipal urban services, in part, by providing innovative financing support through the USAID Housing Guarantee Program, US-AEP urban infrastructure advisory offices are open in Jakarta, Indonesia, and Bangkok, Thailand. USAID Missions in Indonesia and Thailand have signed bilateral Housing Guarantee agreements with the Government of Indonesia and the Royal Thai Kingdom to finance urban infrastructure projects. These agreements provide funding for public projects with public or private financing and in the future are expected to support financing for private BOO or BOT projects.

1994: The urban infrastructure advisors facilitated a range of activities. For instance, the city of Samarang, Indonesia, signed a Memorandum of Understanding with Waste Management International to study the feasibility of establishing a system of integrated services that would be privately built, owned, and operated. In Thailand, the infrastructure advisor supported Montgomery-Watson in building a GIS data base for wastewater needs analysis for the Central River Project and contributed to developing a safe landfill for hazardous material on the country's eastern seaboard.

◆ **Clean Energy Initiative**
designed/implemented with the US Department of Energy (DOE) and USAID's Global Bureau, Office of Energy and Infrastructure

Expedites the use of cleaner energy-generating technologies, creates long-term relationships among US and Asian utilities, research institutes, and private industry, and enhances cooperation among US government agencies. Pilot programs are under way in India, Indonesia, and Thailand. The initiative focuses on information dissemination, market development, policy reform, and export finance. Priority markets include clean coal technology, renewable energy, and technologies to improve end-use efficiency.

1994: DOE/ADEPT (Assisting Development of Energy Practices and Technologies) completed a study of Indian refrigeration technology. An interagency study mission issued a major report analyzing economic and environmental implications of coal washing in India.

US-AEP activities and implementors

are catalysts for: better quality of life and economic sustainability

in Asia and the Pacific, increased economic opportunities and jobs in the United States, and global environmental improvement.

◆ **Benjamin Franklin Fellows (BFF)**
designed and initially implemented with the US Department of Energy

Will place senior technical management personnel from US industry as advisors to corporate leaders in Asia on paid sabbaticals of up to two years. The first group, from the American electric utility sector, will serve as technical resources for CEOs of utilities in India, Indonesia, Philippines, Thailand, and possibly Korea and Taiwan. Their expertise in such clean energy areas as integrated resource planning, demand side management and renewable energy is intended to improve Asian utility performance with corresponding reduction in greenhouse gas emissions. The Ben Franklin fellowships are part of a \$9 million, Asian sustainable energy initiative to be launched jointly in 1995 by US-AEP, the Office of Energy, Environment, and Technology in USAID's Global Bureau, and the USAID Missions in India, Indonesia, and Philippines.

◆ **Biodiversity Conservation Network (BCN)**
designed with/implemented by the Biodiversity Support Program

Brings together Asian, Pacific, US, or international NGOs, communities, businesses, universities, government agencies, and similar organizations to combat the loss of valuable habitats and to encourage the sustainable use of biological resources in active partnership with local and indigenous communities. BCN provides competitively awarded grants that encourage the development of enterprises that depend on the conservation of local biological diversity for their long-term viability. Projects supported by BCN grants must monitor the social, economic, and biological impacts of this enterprise-oriented approach to community-based conservation. Planning grants enable recipients to embrace a participatory approach to project design among collaborating communities, governmental and nongovernmental organizations, scientists, and enterprises. In addition, planning grants enable collaborators to perform new enterprise feasibility studies and to

define long-term biological and socioeconomic monitoring plans. Implementation grants are awarded for periods of up to three years to build on planning grant activities. The regional BCN office in Manila, Philippines, provides technical assistance to proponents and grantees and promotes information sharing across project sites. The Biodiversity Support Program is a consortium comprised of World Wildlife Fund-US, The Nature Conservancy, and the World Resources Institute with core support from USAID.

1994: Three-year implementation grants have been approved for six projects, which will seek to conserve biodiversity in an aggregate land area of about 4,029 square kilometers and improve the quality of life for over 200,000 local people. In addition, 33 feasibility studies have been awarded.

◆ **Controlling Trade in Endangered Species**
designed/implemented by the US Department of the Interior, US Fish and Wildlife Service

Provides CITES implementation training to scientific, management, and inspection authorities in Bangladesh, India, Indonesia, Nepal, and Philippines to control the trade of endangered wildlife and wildlife products. The Animal and Plant Health Inspection Service (APHIS) of the US Department of Agriculture, the CITES Secretariat in Switzerland, and the TRAFFIC Network (a joint program of World Wildlife Fund and IUCN - the World Conservation Union) are also participating.

As **1994** ended, the CITES implementation workshops were being expanded to Taiwan, South Korea, and Malaysia/Singapore for 1995 and 1996.

◆ **State Environmental Initiative
implemented by the Council of
State Governments (CSG),
Lexington, Kentucky**

Encourages long-term international partnerships in environmental and economic development between US states and Asian/Pacific nations and territories. This three-year initiative, launched in late 1994, promotes the concept that transfers of environmental expertise and technology enhance state economic development and stimulate states to develop appropriate public-private partnerships that meet Asian interest in US environmental experience, technology, and practice. The initiative solicits proposals from state environmental protection and economic development agencies, existing public/private partnerships for environmental protection in the states, university development projects for environmental technologies, and other state-centered efforts. Grants range, on average, from \$120,000 to \$150,000 and require a 2:1 dollar or in-kind match by the initiating state. The first proposal submission deadline is June 1, 1995.

1994: US-AEP/CSG agreement signed.

◆ **Nongovernmental Organization
(NGO) Action**

Promotes collaborations among a broad spectrum of NGOs, both in the United States and Asia, and the Asian private sector on projects specifically affecting the urban and industrial (brown) environment.

1994: Convened a "Nongovernmental Organization Business Networking" workshop in Manila. Forty representatives of business, government, and NGOs from Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, and the United States met to cross-pollinate ideas, reinforce individual and organizational interaction, establish lasting networks, and get activities started, particularly in the area of pollution prevention.

◆ **ASEAN Environmental Improvement
Project (EIP)**

*Implemented under contract with
Louis Berger International Inc.*

Develops partnerships among US and Asian industries and institutions to prevent industrial pollution by introducing environmental management techniques and clean technologies. Closely coordinated with the private sector and in collaboration with USAID mission and other donor programs, EIP's activities focus on the Association of Southeast Asian Nations (ASEAN) — Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand. An ASEAN-wide, public/private steering committee addresses transnational issues. EIP training and technical assistance resolves industrial pollution problems through waste reduction assessments as a part of strategic environmental management. Assessments concentrate on industrial growth sectors with potential for pollution reduction and the introduction of US technology. These efforts are complemented by a small grants program to strengthen the institutional and technical capabilities of ASEAN-based NGOs to address industrial pollution issues, foster awareness of environmental issues, and improve environmental education. During 1994 EIP, which was a pre-existing USAID regional project, was merged as an element of US-AEP. An even greater amalgamation is planned for 1995.

1994: EIP completed 24 factory environmental assessments for a total of 56 since the project began. EIP also finished reviews of each ASEAN member country's environmental policies, laws, and regulations and is currently drawing up a strategy on policy improvements and market-based incentives for each country.

◆ **Environmental Information
in collaboration with the United
States Information Service (USIS),
National Association of State
Development Agencies, Air and
Waste Management Association
(AWMA), and The Asia Society**

Disseminates a broad range of environmental information in Asia and the United States.

1994: Traveling information centers featuring US environmental technology were displayed in 26 locations in Asia and the Pacific under the auspices of USIS and US-AEP. US-AEP distributed 20,000 copies of *The Green Pages* which lists some 2,000 US environmental companies, and developed and distributed *A Pocket Guide for International Environmental Executives* and *Environment Asia/Pacific: The Executive's Guide to Government Resources*. Timothy E. Wirth, US under-secretary of state for global affairs, discussed US environmental policy at an Asia Society seminar series sponsored by US-AEP. The Second International Comparative Risk Analysis Symposium was held in Taipei, Taiwan, cosponsored by the Taiwan Environmental Protection Administration, EPA, the Foundation of Taiwan Industry Service, AWMA, and US-AEP.

Financial Statement

Historical Information

The United States-Asia Environmental Partnership (US-AEP) was authorized under a Presidential Determination, dated December 30, 1991, as a ten (10) year US government (USG) effort, commencing January 4, 1992, to mobilize the intellectual and financial resources of the US public, private, and nongovernmental sectors in order to assist the developing and newly industrializing nations and territories of Asia and the Pacific to deal with their environmental problems and, thereby, enhance sustainable development, with the maximum transfer of US experience, technology and practice.

In turn, the United States Agency for International Development (USAID), the lead US government agency in US-AEP, authorized core funding for US-AEP amounting to \$100 million under USAID Project Number 499-0015 dated May 25, 1992. In this project format, the program presently has an assistance completion date (PACD) of December 31, 1999. The activities under this arrangement have a total of approximately seven and one-half (7 1/2) years for completion. Consideration is presently being given to extending this date.

The actual obligation of funds for US-AEP has been as follows:

US Fiscal Year 1992	\$11,645,000
US Fiscal Year 1993	\$25,159,000
US Fiscal Year 1994	<u>\$16,398,000</u>
Subtotal	\$53,202,000
Anticipated US Fiscal Year 1995	<u>\$21,600,000*</u>
Total	\$74,802,000

**\$2.5 million of this amount obligated in accordance with the USAID Asia Sustainable Energy Initiative whose funding is in addition to the \$100 million authorization for US-AEP*

One financial objective of US-AEP is to match these core funds on the basis of \$4 for every \$1 of USAID-furnished investment. Thus, over the life of the program, it is expected that \$400 million of cash and in-kind contributions will be made to the program by partner organizations and individuals from the US and Asian public, private, and nongovernmental sectors.

Moreover, it is anticipated that these investments will bring about technology transfers from the US to Asian and Pacific countries through sales, joint ventures and licensing agreements amounting to a minimum of \$5 billion during the ten (10) year life of the partnership.

General Information Regarding Financial Statements

Statement A: This statement shows the amounts of US-AEP actual investments (i.e., the expenditure of USAID core financing) against specific US-AEP program components (i.e., the major management units of US-AEP) and activities together with companion partnership investments (i.e., cash and in-kind expenditures by US and Asian entities) for those components and activities for the period from program inception (i.e., the date actual field activities of US-AEP commenced) to December 31, 1994, a period of two and one-quarter (2 1/4) years.

Statement B: This statement shows US-AEP actual investments and partnership investments arrayed against the country category in which, or for which, they were made, the total current value (in US\$) of all technology transfers to those country categories from the US, which reliable sources in companies affecting the transfers or in intermediate organizations (such as trade associations or state development agencies) have reported to US-AEP as having resulted substantially or meaningfully from US-AEP actions or programs; plus the

US-AEP and Partnership Investments by Program Element

From Program Inception (October 1, 1992, or March 20, 1992 in the case of ASEAN EIP) to December 31, 1994

Program Component and Activity	US-AEP Actual Investments	Partnership Investments	Total Investment
Professional and Organizational Development Component			
*Environmental Fellowship Activity (The Asia Foundation)	\$3,286,898	\$3,168,000	\$6,454,898
*Environmental Business Exchange Activity (World Environment Center)	\$3,210,656	\$3,538,348	\$6,749,004
*Short-Term Technical Training Activity (US Environmental Training Institute)	\$2,200,275	\$1,439,725	\$3,640,000
*Environmental Action Activity (US Environmental Protection Agency)	\$862,900	\$774,900	\$1,637,800
<i>Component Subtotal</i>	<u>\$9,560,729</u>	<u>\$8,920,973</u>	<u>\$18,481,702</u>
Technology Cooperation Component			
*Asian Offices of Technology Cooperation Activity (US Department of Commerce/US&FCS)	\$2,159,760	\$1,250,000	\$3,409,760
*Environmental Technology Network for Asia (ETNA) Activity (USAID/Center for Trade and Investment Services)	\$58,942	\$300,000	\$358,942
*Environmental Energy Technology Fund Activity (National Association of State Development Agencies)	\$2,758,675	\$7,222,390	\$9,981,065
*Environmental Trade Finance Information Activity (Bankers Association for Foreign Trade)	\$67,574	\$200,250	\$267,824
<i>Component Subtotal</i>	<u>\$5,044,951</u>	<u>\$8,972,640</u>	<u>\$14,017,591</u>
Environment/Energy Infrastructure Component			
*Infrastructure Finance Advisory Service Activity (IFAS) (K&M Engineering & Consulting Corporation)	\$576,147	\$0 (1)	\$576,147
*Urban Infrastructure Representatives Activity (USAID Regional Housing and Urban Development Offices)	\$1,543,010	\$100,000,000	\$101,543,010
*Energy Development Activity (US Department of Energy)	\$125,000	\$700,000	\$825,000
*Trade Development Program Activity (US Trade Development Agency)	\$500,000	N/A	\$500,000
*Environmental Enterprise Development Initiative Activity (OPIC)	\$1,000,000	\$10,000,000	\$11,000,000
<i>Component Subtotal</i>	<u>\$3,744,157</u>	<u>\$110,700,000</u>	<u>\$114,444,157</u>
Biodiversity and Natural Resources Component			
*Biodiversity Conservation Network Activity (WWF, TNC, WRI)	\$7,038,278	\$1,499,301	\$8,537,579
<i>Component Subtotal</i>	<u>\$7,038,278</u>	<u>\$1,499,301</u>	<u>\$8,537,579</u>
Other Activities			
*USAID Mission Transfer Activities	\$2,880,000	N/A	\$2,880,000
*Strategic Planning (TERI)	\$845,798	N/A	\$845,796
*Planning, Programming, Administration, Total Quality Management	\$7,299,040 (2)	\$1,026,500 (3)	\$8,325,540
<i>Component Subtotal</i>	<u>\$11,024,838</u>	<u>\$1,026,500</u>	<u>\$12,051,338</u>
PROGRAM TOTAL	\$36,412,953	\$131,119,414	\$167,532,367
*ASEAN Environmental Improvement Project (Louis Berger International Inc.)	\$6,685,702	\$616,983	\$7,302,685
US-AEP GRAND TOTAL	\$43,098,655	\$131,736,397	\$174,835,052

projected total of expected 1995 technology transfers from companies or intermediate organizations estimated on the same basis. Under an internal USAID determination dated August 29, 1994, US-AEP agreed to restrict the amount of US-AEP investments in "Other USAID Eligible Countries" (i.e., USAID non-presence countries) to a maximum of \$20 million over the course of the US-AEP present program under Project Number 499-0015, as originally authorized. For those countries that were "USAID-Assisted Countries" (i.e., USAID presence countries) and became USAID eligible countries the limitation applies to investments made after the date of the change.

Both statements include the amounts of support provided through the Environmental Improvement Project (EIP) between USAID and the constituent countries of the Association of South East Asian Nations (ASEAN). The ASEAN EIP USAID Project Number 399-0360, was authorized on March 20, 1992 at a Life-of-Project (LOP) level of \$17,500,000. Its project assistance completion date (PACD) is June 30, 1998. During the summer of 1994, a decision was made by the management of the USAID Bureau for Asia and Near East (USAID/ANE) to integrate EIP into US-AEP. The processes of program and financial integration are now under way.

The notes to this financial information are an integral part of the information.

Notes to Financial Statements:

General:

The figures contained herein, with the exception of those relating to official authorizations and obligations of USAID, are drawn from the operational files of US-AEP, its partners and the beneficiaries of the program. The amounts indicated against individual country categories represent figures resulting from the "demand driven" activities of US-AEP. They do not represent country allocations, entitlements or other pre-programmed levels which would represent funding arrangements not part of the US-AEP program. The figures are not official numbers drawn from the accounting records of the United States government. Nevertheless, the staff of the secretariat of US-AEP believe them to be accurate and to fairly represent the operations and performance of the program.

Specific:

N/A Not applicable

- (1) IFAS activity by K&M Engineering is a commercial contract with no direct partnership "leverage."
- (2) Investments required for providing contracted operational planning, programming, and administration of the US-AEP program, largely costs of the technical support services contract with Tropical Research and Development, Inc. (TR&D). Includes certain communications, public education, outreach, and

US-AEP Investment and Returns by Region

From Program Inception (October 1, 1992 or March 20, 1992 in the case of ASEAN EIP) to December 31, 1994

CATEGORY	US-AEP (4) Actual Investments	Partnership (5) Investments	Total Investment	Total Current Value All (6) Technology Transfers	Total 1995 Projected Additional Value All (7) Technology Transfers
USAID-Assisted Countries (8)	\$23,294,145	\$113,465,949	\$136,760,094	\$208,786,131	\$609,610,000
Other USAID Eligible Countries (9)	\$5,819,768	\$6,100,790	\$11,920,558	\$114,310,083	\$299,490,000
Regional		\$11,552,675 (10)	\$11,552,675	\$93,588,000 (11)	\$84,050,000
Operational Total	\$29,113,915	\$131,119,414	\$160,233,327	\$416,684,214	\$993,150,000
Planning, Program Integration and TOM	\$7,299,040 (2)	(3)	\$7,299,040		
TOTAL	\$36,412,953	\$131,119,414	\$167,532,367	\$416,684,214	\$993,150,000
ASEAN Environmental Improvement Project	\$6,685,702	\$616,983	\$7,302,685	(12)	(12)
GRAND TOTAL	\$43,098,657	\$131,736,397	\$174,835,052	\$416,684,214	\$993,150,000

partnering activities undertaken under grant or contract from TR&D. Also includes investments in program total quality management, largely costs of the quality assurance activities of Management Systems International.

- (3) Estimated value of partners' counterpart investments to US-AEP efforts in communications, public education, and outreach.
- (4) Actual expenditures by US-AEP and budget transfers to USAID missions for work that integrates missions' programs with US-AEP activities. Includes grants awarded by BCN and NASDA technology transfer grants, whether or not funds were disbursed.
- (5) Includes cash and in-kind or matching contributions, or attributions, reported by all partners to US-AEP. Includes, in Thailand

and Indonesia, \$50 million of Housing Investment Guaranty funds acquired by each host government from US commercial sources and guaranteed by the US government for the purpose of additional leverage.

- (6) Represents value reported to US-AEP by US companies or intermediaries (such as trade associations or state development agencies) of all sales of goods and services; and contracts for goods and services, systems and projects, plus estimated value of all joint ventures and licensing agreements to US firms during the first five (5) years of such agreements.
- (7) Projected value as estimated by US companies or intermediaries under the same terms as current value transfers. These may or may not come to pass or may be delayed into subsequent years.

(8) Bangladesh, India, Indonesia, Mongolia, Nepal, Philippines, South Pacific, Sri Lanka, and Thailand. South Pacific was USAID-assisted through September 30, 1994. In USG Fiscal Year 1995 and beyond incremental figures are recorded as "Other USAID Eligible."

- (9) These are countries eligible for US-AEP assistance under the Foreign Assistance Act (Hong Kong, Korea, Malaysia, Singapore, Taiwan, and the South Pacific after October 1, 1994) but without USAID representation.
- (10) Regional investments not subdividable.
- (11) Not otherwise identified by the US firms reporting values of transfers to US-AEP.
- (12) US-AEP is in the process of developing a system to better track results in this element.

**US-AEP acts with guidance from the
Trade Promotion Coordinating Committee**

Department of State (DOS)
 Department of the Treasury
 Department of Defense (DOD)
 Department of Interior (DOI)
 Department of Agriculture (USDA)
 Department of Commerce (DOC)
 Department of Labor (DOL)
 Department of Transportation (DOT)
 Department of Energy (DOE)
 Office of Management and Budget (OMB)
 Office of the US Trade Representative (USTR)
 Council of Economic Advisors
 Environmental Protection Agency (EPA)
 Small Business Administration (SBA)
 Export-Import Bank of the United States (EXIM)
 Overseas Private Investment Corporation (OPIC)
 United States Agency for International Development (USAID)
 United States Trade and Development Agency (TDA)
 United States Information Agency (USIA)

Activity Implementing Organizations

Air and Waste Management Association (AWMA)
 American Consulting Engineers Council (ACEC)
 The Asia Foundation (TAF)
 The Asia Society (TAS)
 Bankers Association for Foreign Trade (BAFT)
 Center for Trade and Investment Services (CTIS), USAID
 Council of State Governments (CSG)
 Global Bureau, Office of Environment and Urban Development, USAID
 K&M Engineering and Consulting Corporation
 Louis Berger International Inc.
 National Association of State Development Agencies (NASDA)
 The Nature Conservancy (TNC)
 Overseas Private Investment Corporation (OPIC)
 Pittsburgh Energy Technology Center, DOE
 United States Environmental Export Council
 United States Environmental Training Institute (USETI)
 United States Fish and Wildlife Service, DOI
 United States & Foreign Commercial Service (US&FCS), DOC
 Water Environment Federation (WEF)
 World Environment Center (WEC)
 World Resources Institute (WRI)
 World Wildlife Fund-USA (WWF)



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Led by the United States Agency for International Development (USAID), US-AEP was founded in 1992 to assist in addressing environmental degradation and sustainable development issues in the Asia/Pacific region by mobilizing US environmental experience, technology and practice. The program brings together the resources of 25 US government departments and agencies and thousands of businesses and non-governmental organizations that work with 35 nations and territories in Asia and the Pacific. US-AEP activities focus on stemming the loss of biodiversity in Asia, preventing and controlling industrial pollution, assisting in the creation of urban environmental infrastructure, and improving energy efficiency and employing renewable energy technologies. While individual US-AEP activities seek practical solutions to local problems, the cumulative effort positively affects global environmental issues such as climate change. Tropical Research & Development (TR&D) is the US-AEP technical support services contractor.

In this report, "US-AEP" is used as the abbreviation for "the US-AEP program." It is understood that the activities described here take place under this program's auspices as led by the United States Agency for International Development. Likewise IFAS (Infrastructure Finance Advisory Service) and ETNA (Environmental Technology Network for Asia) are activities developed under this US-AEP program.

All dollar figures are US dollars.

Editor: Margaret Sullivan, with Pamela Cubberly, Carl Hanson, Vicki McDonald

Graphic Design: Levine & Associates



Printed on recycled paper with soy inks