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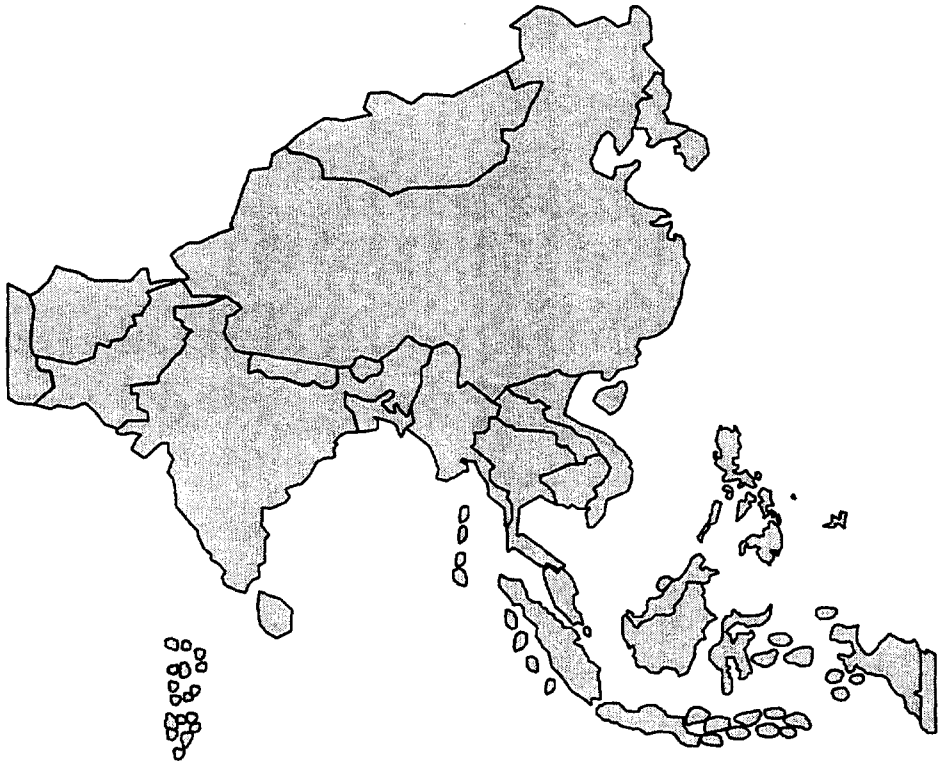
THE WORLD BANK

ASIA ALTERNATIVE ENERGY UNIT (ASTAE)

STATUS REPORT #3



April 1996
Washington, D.C.

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THE ASIA ALTERNATIVE ENERGY UNIT (ASTAE)

STATUS REPORT #3

July 1995 - December 1995

INTRODUCTION

1. The Asia Alternative Energy Unit (ASTAE), created in 1992 as a pilot program, is funded by the World Bank, the Netherlands DGIS, the USDOE, the UNDP and other donors. The Unit's main function is to assist the Asian borrowers and the Asia Region Country Departments to identify and prepare renewable energy and energy efficiency components for Bank-supported operations in Asia Region. Its other functions include technical assistance, training (of Bank staff and borrowers), collaboration with donor agencies on alternative energy matters and resource mobilization.

2. This Report focuses on ASTAE's activities and work program, aid coordination and the findings of the Mid-Term Evaluation of the Unit. It also provides information on staffing status and resource mobilization and utilization during the six months period since the last Status Report (#2) from July 1995 to December 1995.[1] During the period under review, ASTAE has supported alternative energy activities in India, Indonesia, Sri Lanka, Thailand, Lao PDR, Vietnam, the Philippines and the People's Republic of China. The volume of ongoing and prospective World Bank/GEF financial support for Asia Region renewable energy and energy efficiency projects and project components has grown from only $2 million in FY92 to nearly $800 million over the FY93-97 five year period. Total project costs for these Bank-supported public and private sector investments exceed $1.5 billion.

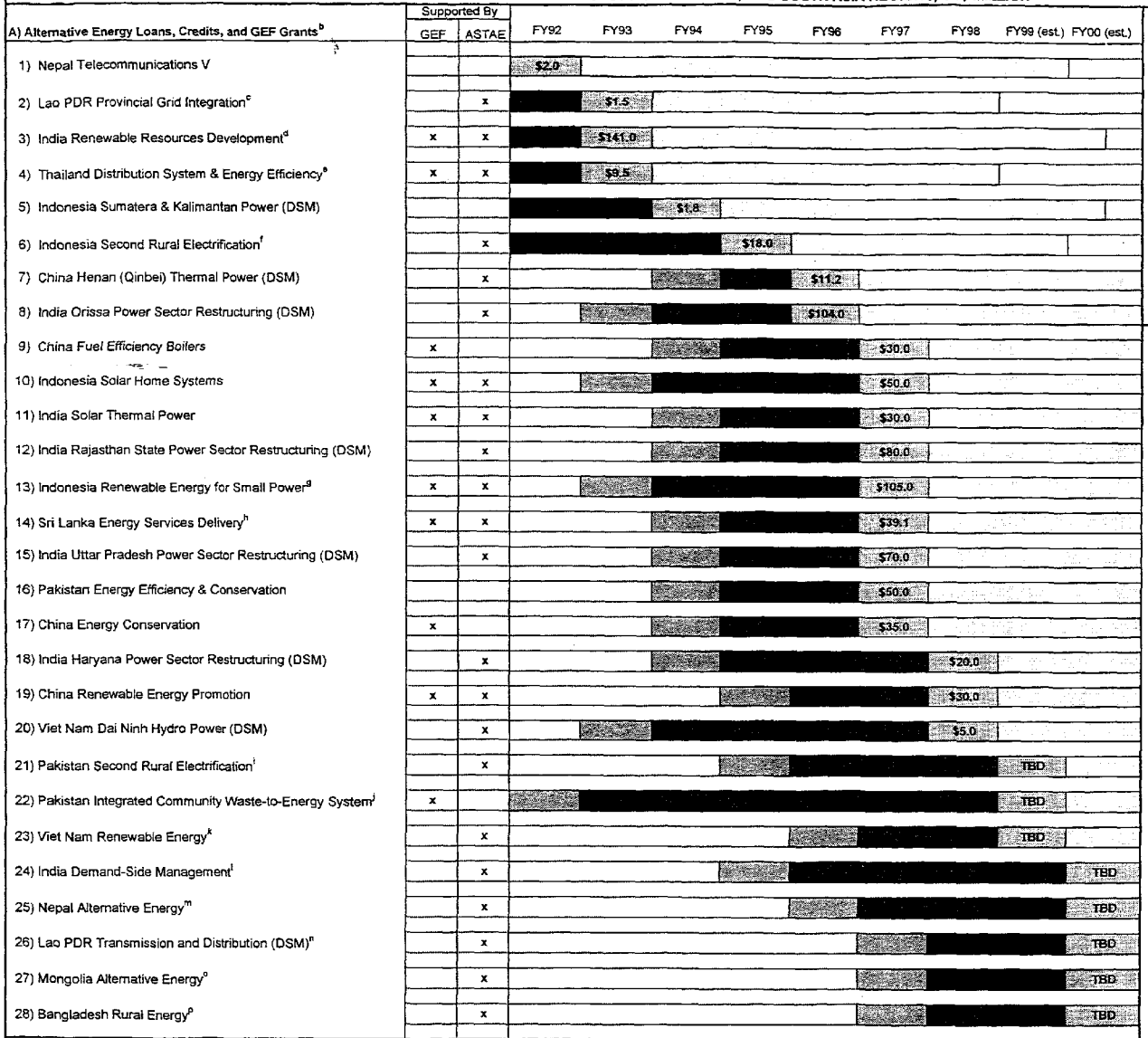
3. ASTAE is a useful model of how a Multilateral Development Bank (MLDB) can help integrate alternative energy options into energy delivery services. Increasingly, Bank client countries are committing themselves to alternative energy development in their power sector policies and in their Environmental Action Plans. World Bank staff in the two Asia Regions are also seeking to identify areas for possible Bank support for renewable energy and energy efficiency.

ASTAE's support to client countries and Bank staff seeks to:

- Mainstream alternative energy options at all levels of decision making;
- Strengthen institutional capacities to identify, assess and implement proven, cost-effective energy options; and
- Foster public-private sector partnerships in development of environmentally sustainable energy projects.

[1] The next Status Report (#4) covering the full FY96 (July 1995 - June 1996) will be issued in August/September 1996.

Figure 1: WORLD BANK/GEF SUPPORT FOR ALTERNATIVE ENERGY, FY92 - FY2000[a]
EAST ASIA & PACIFIC, AND SOUTH ASIA REGIONS, US$ MILLION



PROJECT STATUS (Generalized Into One Year Intervals)

- RECONNAISSANCE AND IDENTIFICATION
- PREPARATION
- $50.0 APPRAISAL, NEGOTIATION, LOAN/CREDIT/GRANT AMOUNT, BOARD APPROVAL, AND SIGNING
- SUPERVISION

NOTES

a) Includes renewable energy and energy efficiency/Demand-Side Management (DSM) technologies and processes.

b) Includes lending for free standing projects and project components.

c) Technical assistance for DSM institution building.

d) Private sector investments in solar PV, wind farms and mini-hydro sub-projects.

e) GEF-supported five-year DSM plan in Loan 35980-TH.

f) Small geothermal and grid-connected mini-hydro components and technical assistance for planning the integration of renewables into rural electrification.

g) Includes support to private sector for grid-connected biomass cogeneration, mini-hydro and mini-geothermal projects to support PLN.

h) Possible components include off-grid solar PV and micro-hydro, grid-connected mini-hydro, a pilot wind farm and DSM (GEF).

i) Renewable energy component not yet defined.

j) Proposed $11 million stand-alone GEF project.

k) Unidentified. Possible credit of $50-75 million.

l) Proposed $100 million loan for country-wide DSM investments.

m) Unidentified. May contain energy efficiency and/or renewable energy components.

n) Unidentified. Possible credit of $50-75 million.

o) Unidentified. May contain energy efficiency and/or renewable energy components.

p) Unidentified. Possible credit component of $50-75 million.

Sources: FY92-95 Staff Appraisal Reports; FY96-FY2000 Lending Reports and Monthly Timetables as of 12/28/95; and Status of IBRD/IDA Projects in Execution, as of 9/30/95.

ASTAE
12/31/95

WORK PROGRAM

Lending Support

1. As of December 1995, ASTAE was providing support for 12 of the 17 lending operations in the World Bank/GEF FY 93-97 alternative energy portfolio in Asia (see Figure 1). This support in project preparation and supervision has also included free-standing ASTAE technical assistance to borrowers to address policy and planning issues and enhance client capacity to prepare and implement alternative energy investments.

2. The Bank's Asia clients have identified and prepared a wide range of alternative energy options for Bank/GEF financing. These comprise investments in renewable energy technologies (solar photovoltaic, small and mini-hydro, wind power, biomass cogeneration, small geothermal and solar thermal electric) as well as end-user energy efficiency programs. Demand-side management programs include investments in efficient lighting, appliances, motors, ventilation and air-conditioning technologies, DSM load management, industrial and biomass cogeneration as well as ESCO development. ASTAE has assisted Bank staff and borrowers to develop appropriate infrastructure for sustainable alternative energy projects and project components. Working closely with the Bank's Asia Country Departments, ASTAE has customized its country-specific technical assistance for renewable energy and energy efficiency development to meet borrower needs. Examples include :

- Funding support for mini-hydro and mini-geothermal prefeasibility and feasibility studies;
- Development of a Least Cost Computer Tool for evaluating renewable and conventional grid options in rural electrification planning;
- Assistance in performance testing of compact fluorescent lamps under local power conditions;
- Assistance in renewable energy Business Plan development for NGOs, suppliers and small developers;
- Development of PV bid specifications.

3. Figure 2 " Renewable Energy Projects" and Figure 3 "Demand-Side Management Projects" detail the specific technologies and planning and policy components in the 12 projects for which ASTAE has provided support and free standing technical assistance in the past six months.

FIGURE 2 - RENEWABLE ENERGY PROJECTS
ASTAE FY93-97 PORTFOLIO, BY TECHNOLOGY AND POLICY MEASURES

a) Includes small-, mini-, and micro-geothermal.

b) Includes small-, mini-, and micro-hydro.

c) Includes electricity tariff and import duty rationalization.

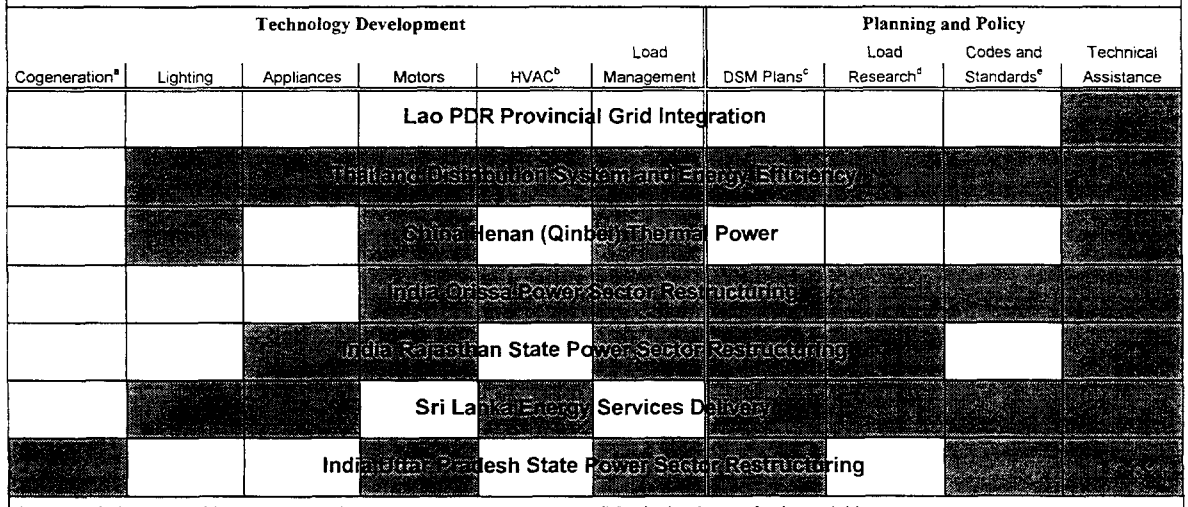
d) Includes institutional strengthening activities.

e) Includes private sector and utility implemented projects.

Project includes technology/policy measure.

Project does not include technology/policy measure.

FIGURE 3 - DEMAND-SIDE MANAGEMENT PROJECTS
ASTAE FY93-97 PORTFOLIO, BY TECHNOLOGY AND POLICY MEASURES



a) Includes industrial and biomass cogeneration.

b) Includes vapor absorption technology.

c) Includes monitoring and evaluation activities.

d) Institutional strengthening activities.

e) Includes energy efficiency building codes and equipment standards.

Project includes technology/policy measure.

Project does not include technology/policy measure.

Economic and Sector Work

4. ASTAE's economic and sector work activities during this review period included a Study on Renewable Energy in China and a Report on Best Practices for Solar PV Household Electrification Programs. Under the supervision of the Bank's China Department, ASTAE and the Bank's Industry and Energy Department are jointly managing the World Bank/Government of China (GOC) Renewable Energy Study to be completed in FY96. In addition to its Trust Fund resources, ASTAE has mobilized parallel resources from the US National Renewable Energy Laboratory for technical aspects of the Study. ASTAE has also helped the GOC obtain GEF grant resources for the Study's thermal component. The China Renewable Energy Study is expected to identify priorities and strategies for China's power-related renewable energy development. Study follow-up is likely to include financial support from the GEF and others (IBRD, bilaterals and the private sector) for windfarm, solar PV development and possibly bagasse cogeneration, as well as technical assistance for institutional and policy changes to strengthen the enabling environment for renewable energy development.

5. The ASTAE Best Practices for Photovoltaic Household Electrification Programs Report, which will be issued as a World Bank Technical Paper, is summarized below in Box 1.

Box 1: Best Practices for Photovoltaic Household Electrification Programs Report

With the cooperation of the German BMZ/GTZ, the Netherlands DGIS and the USDOE, ASTAE commissioned four case studies of solar home system experiences in Indonesia, Sri Lanka, the Philippines and the Dominican Republic. These studies, as well as reviews with photovoltaic professionals worldwide have identified key ingredients of successful PV programs in developing countries and ways to remove financial and institutional barriers to solar home system dissemination. The "Best Practices for Photovoltaic Household electrification Programs" Report explains **why** PV can be a feasible option to grid-based energy service delivery; **where**, within the rural electrification framework, PV has a cost-effective niche and a sustainable market; and **how** to improve prospects for successful solar home system programs. The PV Best Practices focus on the need to:

- Overcome the First Cost Barrier for Solar Home Systems;
- Establish Responsive and Sustainable Infrastructure for PV programs; and
- Provide and Maintain Quality Products and Services

Best Practices & Capacity Building

6. Alternative energy development requires effective public-private sector partnerships. This is particularly essential when the private sector is expected to provide energy services or to participate in utility-led programs. ASTAE initiatives in this regard include:

- Financial and technical assistance in drafting standard power purchase agreements for small producers;
- Assistance in identifying and establishing South-South twinning arrangements to transfer knowledge and best practices;
- Establishing alternative energy standards, guidelines and codes;
- Encouragement of private sector participation ;
- Support for a DSM collaborative process.

Boxes 2 and 3 below summarize ASTAE's recent experiences in the Philippines and the Lao PDR in supporting DSM private-public partnerships and DSM south-south twinning arrangements.

Box 2: Private-Public Partnerships: *DSM in the Philippines*

ASTAE is actively promoting public-private sector partnerships to develop a national DSM policy and programs. The Philippines Energy Regulatory Board (ERB) requested ASTAE assistance to design and implement a Collaborative Process to be patterned after successful U.S. DSM Collaboratives to develop a national DSM regulatory framework. In April 1995, the Bank an Institutional Development Fund (IDF) Grant of US$245,000 to the ERB to support this Collaborative Process among public and private sector stakeholders. In November 1995, the Philippines Department of Energy (DOE) issued a Departmental Order instructing all utilities to prepare DSM plans every two years for ERB review and approval. The order also specifically instructs the ERB to encourage the use of a Collaborative Process that involves all public and private sector stakeholders, and that develops criteria for implementation and for regulatory treatment of DSM projects.

Successful U.S. DSM Collaboratives involve private sector stakeholders and, in particular, the NGO community from the outset of deliberations. This early involvement has helped avoid lengthy litigation which can often derail DSM initiatives. With ASTAE assistance, the IDF Grant supported a twinning arrangement between the ERB and the Oregon Public Utility Commission (PUC) which has successfully involved NGOs in its collaboratives, has a solid record in promoting energy efficiency and conservation, and a commitment to preserving the environment. The Oregon PUC will advise the ERB on the lessons learned from their collaboratives. ERB staff will visit the PUC to learn how the DSM regulatory framework has helped protect Oregon's environment. A Filipino lawyer will advise the ERB on the legal aspects of DSM regulation as they arise in the Collaborative Process and a Filipino facilitator will ensure that the interest groups work together to achieve their mutual objectives. Pre-hearing briefings were held in February in Manila and Cebu for all interested parties. These pre-hearing briefings are the first step in building a consensus for successful implementation of a DSM program that reflects the interest of all stakeholders and preserves the Philippines' environment.

Box 3: South-South Twinning: *DSM in the Lao PDR*

ASTAE and its clients in Lao PDR, Malaysia, and Thailand are successfully experimenting with South-South twinning as an alternative to conventional, more costly forms of technical assistance. These involve three separate twinning arrangements between the Lao PDR Electricite du Laos (EDL) and the Malaysian TENAGA, the Thai Energy Conservation Center (ECCT) and the Thai Provincial Electric Authority (PEA). The IDA-assisted Lao PDR Provincial Grid Integration Project (PGI) funds a twinning arrangement between two electric utilities: The EDL and TENAGA. The twinning arrangement, designed by the two utilities with ASTAE support, consists of 26 training and management sessions in various aspects of technical and non-technical utility operations. To date, 57 EDL staff have participated in 14 training sessions at TENAGA's national training center in Malaysia. This technical cooperation is the only up-and-running sub-component of the PGI Project's "Training Center Upgrading Program." More importantly, it is proceeding on schedule and is valued by both EDL participants and management.

EDL management is keen to develop twinning arrangements with other regional energy sector institutions and to tailor them to their country context. Having recognized that English language training can handicap some EDL staff, EDL requested ASTAE funding for a twinning arrangement with the Thai ECCT for a Commercial Sector Audit Workshop, which was held in July 1995. Lao PDR's and Thailand's mutual interest in the power sector, and fundamental cultural and language compatabilities provide a strong foundation for such arrangements. Conducted in Thai and Lao, the Workshop included walk-through audits of 5 buildings in Lao PDR's capital Vientiane, recommendations for energy conservation in EDL's headquarters, and recommendations to expand the ECCT-EDL twinning arrangement. ECCT's proposals to assist EDL to develop an in-house capacity for DSM program design and implementation, and to improve system efficiency at the Lao PDR sub-stations were endorsed by the Lao PDR's Ministry of Industry and Handicrafts. Funding will be provided under the PGI Project and the IDA-assisted power development project to support these efforts.

To revitalize the EDL Training Center Upgrading Program, EDL has asked ASTAE to help set up twinning arrangements with the Thai PEA. PEA's rural electrification experience is directly relevant to EDL's efforts to strengthen its provincial office operations. A recently signed Memorandum of Understanding between Electricite du Vietnam (EVN) and EDL could also form the basis for a fourth regional South-South twinning arrangement.

7. To build local capacity to sustain investments, ASTAE relies heavily on use of local consultants, stakeholder workshops and targeted support and training to key public and private sector participants. (See Attachment 3 - "ASTAE Use of Local Consultants: July 1994 - December 1995" and Attachment 4 - "Dissemination of Best Practices and Lessons of Experience".) While most of ASTAE's training and dissemination efforts are targeted to borrowers and beneficiaries in country-specific or Asian fora, ASTAE also seeks to interest and train Bank staff regarding alternative energy technologies and cross-regional experiences. ASTAE is part of the Bank's Solar Initiative and is frequently asked to represent the Bank vis-à-vis NGOs, bilateral agencies and other MLDBs regarding World Bank alternative energy policies and programs. (See Attachment 4.)

AID COORDINATION

Aid Coordination

8. The Fourth ASTAE Donors Meeting was held in Washington in May 1995. The Meeting was attended by Bank staff and representatives from the Netherlands DGIS, the U.S. DOE, AID, ECRE and Treasury, the UNDP, the German BMZ and GTZ, the European Commission and the British ODA, as well as the Executive Directors' Offices for the US, Australia, Canada, Norway and Switzerland and the Embassies of the Netherlands and the UK. The Fifth ASTAE Donors Meeting will be held on May 2, 1996, also in Washington.

Mid-Term Evaluation

9. A Mid-Term Evaluation of ASTAE by its two main donors, the Netherlands DGIS and the USDOE, was initiated in February 1995. The Donor Evaluation report, issued in November 1995, gave a positive assessment of the Unit's performance. The Donor Evaluation recognized the "crucial role ASTAE has played in nurturing interest in and acceptance of alternative energy technologies by Country Department staff...", that "ASTAE's establishment represents an extraordinary cooperation among the Bank's Asia Regional Offices...the USDOE, the Netherlands DGIS and the UNDP," and that "...without ASTAE, the World Bank/GEF alternative energy investment portfolio in Asia could not have reached its current level." Subsequently in March 1996, ASTAE prepared a Prospects Paper in response to donor inquiries as to "how ASTAE might continue to augment the environmentally sustainable nature of Bank/GEF assistance to energy sector development in Asia" so that Bank Regional Management could explore options for alternative energy support after FY97, the end of the current phase of donor support.

FINANCES

Staffing

10. As of December 31, 1995, ASTAE's core staff comprised 12 higher level and 6 support level staff. During the review period, 3 new higher level positions have been filled, including a Principal Energy Economist, an Alternative Energy Economist and an Operations Analyst. (See Attachment 5 - ASTAE Team Members.)

Resource Mobilization

11. Since FY92, ASTAE has mobilized over $8 million of external funds (see Table A below and Attachment 6 for ASTAE Key Funding Events). World Bank support to ASTAE has grown from $226,400 in FY92 to $1 million in FY95 with a projection of more than $2 million by FY97. Funding flows to ASTAE from July through December, 1995 totalled $1.3 million of which $680,000 came from the World Bank and $578,000 from Donors, as detailed below:

World Bank	
• Project Preparation Facility (PPF) Advance for Sri Lanka Energy Services Delivery Project	$ 340,000
• GEF-Project Development Facility (PDF) Grant for Sri Lanka Energy Services Delivery Project	200,000
• GEF-Project Development Facility (PDF) Grant for China Renewable Energy Study	140,000
Total World Bank	**$680,000**

Donors

• UNEAP Trust Fund Tranche #3	$264,000
• US-DOE Trust Fund Tranche #2	314,000
Total Donors	**$578,000**

Table A: Resource Mobilization - Donor and World Bank Funding Flows to ASTAE, FY92-97

	FY92		FY93		FY94		FY95		FY96		FY97		Total	
	US$	*%*	*US$*	*%*	*US$*	*%*	*US$*	*%*	*US$*	*%*	*US$*	*%*	*US$*	*%*
Netherlands DGIS	0	0	1,558,200	66	821,100	39	1,497,200	42	608,600	14	0	0	4,485,100	29
UNEAP	0	0	0	0	69,500	3	190,900	5	340,000	8	250,000	9	850,400	5
U.S. 1/	108,000	32	396,500	17	445,300	21	756,400	21	770,000	17	175,000	6	2,651,200	17
Other Donors 2/	0	0	0	0	60,000	3	59,500	2	212,000	5	100,000	3	431,500	3
World Bank 3/	226,400	68	419,100	18	688,100	33	1,046,000	29	2,492,800	56	2,415,000	82	7,287,400	46
Total	334,400	100	2,373,800	100	2,084,000	100	3,550,000	100	4,423,400	100	2,940,000	100	15,705,600	100

Footnotes
1/ Includes USDOE, USTDA, USAID, US/ECRE, US/NREL, Sandia National Laboratory, US/NRECA and US/IFREE
2/ Includes New Zealand Ministry of Foreign Trade, German BMZ/GTZ, European Community and IEA
3/ Includes ASTAE World Bank/GEF Annual Discretionary Budget, Office Occupancy, Consultant Trust Funds, Japan PHRD, IDF, PPF and PDF

Resource Utilization

12. World Bank financial support of ASTAE has also increased steadily and is projected to be nearly 60% of ASTAE's FY97 expenditures (see Table B below). The growing World Bank support for ASTAE is due to the increased demand from World Bank Country Departments for ASTAE staff support and ASTAE's utilization of World Bank Trust Funds and other grant sources. It is anticipated that World Bank- financed plus committed donor funds are sufficient to maintain the current expenditure level and work program through FY97.

Table B: Resource Utilization - ASTAE Expenditures, FY92-97

	FY92		FY93		FY94		FY95		FY96		FY97		Total	
	US$	*%*	*US$*	*%*	*US$*	*%*	*US$*	*%*	*US$*	*%*	*US$*	*%*	*US$*	*%*
Netherlands DGIS	0	0	530,300	40	928,000	43	636,800	26	1,000,000	24	960,500	23	4,055,600	28
UNEAP	0	0	0	0	50,900	2	85,000	3	273,100	7	263,000	6	672,000	5
U.S. 1/	108,000	32	390,600	29	433,200	20	606,500	25	676,000	16	436,900	11	2,651,200	18
Other Donors 2/	0	0	0	0	60,000	3	59,500	2	212,000	5	100,000	2	431,500	3
World Bank 3/	226,400	68	419,100	31	688,100	32	1,046,000	43	1,978,300	48	2,329,500	57	6,687,400	46
Total Expenditures	334,400	100	1,340,000	100	2,160,200	100	2,433,800	100	4,139,400	100	4,089,900	100	14,497,700	100

Footnotes
1/ Includes USDOE, USTDA, USAID, US/ECRE, US/NREL, Sandia National Laboratory, US/NRECA and US/IFREE
2/ Includes New Zealand Ministry of Foreign Trade, German BMZ/GTZ, European Community and IEA
3/ Includes ASTAE World Bank/GEF Annual Discretionary Budget, Office Occupancy, Consultant Trust Funds, Japan PHRD, IDF, PPF and PDF.

CONCLUSIONS

13. Three key elements underlie ASTAE's significant progress in integrating alternative energy options into the World Bank's energy sector assistance to its Asian borrowers. These are:

- Visible Bank management support for the Unit and its work;
- Donor encouragement, financial assistance and feedback; and
- ASTAE's strong client focus.

14. ASTAE has become an aggressive advocate of alternative energy solutions within the Bank as well as a source of technically sound and reliable advice for alternative energy project development within the Asia region. More work remains to be done. Bank staff and our Asian counterparts increasingly recognize that renewable energy and demand-side management options offer technically and economically viable and environmentally benign solutions to their energy needs. However, in some countries, alternative energy constituencies are still small, relative to the majority of energy sector planners and project implementors who are more comfortable with conventional supply solutions. Alternative energy projects are innovative and sometimes resource intensive when they require new approaches, new skills and new behaviors. With most of the Asia Region alternative energy portfolio of projects still under preparation, the actual cost-effective delivery of alternative energy projects is yet to be demonstrated. This remains a long-term and important challenge.

15. The ASTAE experience thus far demonstrates that a dedicated World Bank/Donor-supported program can generate broad Bank/GEF support for alternative energy investments. The necessary resources and work program commitments are already in place to support the Unit through June 1997. Looking to the future, ASTAE will continue to work with its Asian clients to develop new tools and to incorporate the lessons learned. The Unit will also continue to collaborate closely with Bank staff, the GEF and other partners (IEN, IFC, ADB, Donor agencies and NGOs) to:

- Introduce renewable energy lending into Bank/GEF operations in Nepal, Vietnam and Bangladesh;
- Extend renewable energy and DSM/energy efficiency operations to Pakistan and Mongolia;
- Replicate successful renewable energy and demand-side management models in new provinces/states in Indonesia, India and China; and
- Identify and prepare renewable energy and DSM projects/components in sectors other than power (e.g. agriculture, forestry, transportation, municipal water supply, health and education).

STATUS OF WORLD BANK/GEF LOANS, CREDITS AND GRANTS FOR ALTERNATIVE ENERGY SUPPORT - EAST ASIA & PACIFIC AND SOUTH ASIA REGIONS (FY93-97)

A) Ongoing Loans and Credits

1) Lao PDR Provincial Grid Integration (PGI) FY93
This project includes components for demand-side management (DSM) and institutional building. ASTAE is coordinating a South-South twinning arrangement between Electricite du Laos and Tenaga Nasional Berhad (the Malaysian electric utility) to provide the Lao electric utility with comprehensive training in utility operations. ASTAE has also helped twin Electricite du Laos with Tunisia's Agence pour la Matrise de L'Energie for training in commercial sector energy audits. This activity is funded under a PGI credit. The total Bank DSM component is **US$1.5 million**. Credit 24250-LA of US$36.0 million; Board approval date: October 6, 1992; effective date: July 6, 1993; executing agency: Electricite du Laos (EDL).

2) India Renewable Resources Development FY93
ASTAE has assisted in supervising the overall design and appraisal of this project and is assisting in the supervision of the solar photovoltaic (PV), wind and mini-hydro components. A US$26 million Global Environment Facility (GEF) grant supports both the wind farm and solar PV market development components. Two wind farm schemes with a combined capacity of 20 MW and a 2 MW small hydro scheme are included. Lending for the solar PV component totals US$55 million and is expected to address the financing, delivery and installation of up to 3 MW of equipment for lighting, water pumping and other applications. A PV market study has characterized the markets for PV in India and identified intermediaries with a potential for commercializing PV. Total World Bank/GEF support for the renewable energy components is **US$141.0 million** with total project support of US$216.0 million. Loan 35440-IN for US$75 million; Credit 24490-IN of US$115 million; GEF Grant 28633-IN for US$26 million; Board approval date: December 17, 1992; effective date: April 6, 1993; executing agencies: Tamil Nadu Newsprint and Paper Limited (TNPL) for the Loan and the Indian Renewable Energy Development Agency Limited (IREDA) for the Credit and Grant.

3) Thailand Distribution System and Energy Efficiency FY93
ASTAE is responsible for supervising the Electricity Generating Authority of Thailand's (EGAT's) implementation of a GEF financed five-year DSM program. To date, EGAT's Demand-Side Management Office (DSMO) has implemented a Fluorescent Tube Replacement program and a High Efficiency Refrigerator Rebate program. Four additional DSM programs are under preparation to meet a demand reduction goal of 238 MW by the end of 1997. Total GEF support for the DSM component is **US$9.5 million** (GEF Grant 28637-TH) and the Loan 35980-TH is for US$109.0 million; Board approval date: April 27, 1993; effective date: November 29, 1993; executing agency: Electricity Generating Authority of Thailand (EGAT).

4) Indonesia Sumatera & Kalimantan Power FY94
This program will support the Government of Indonesia's long-term policy agenda for the power sector, including increased private sector participation, restructuring of the national power utility (PLN), implementing regulatory oversight, and introducing a formula-based tariff structure. The DSM component will consist of technical assistance for an institutional study which will make recommendations on DSM staffing and policy requirements necessary to prepare a DSM strategy. The total Bank support for the DSM component of this project is **US$1.8 million**. Loan 37610-IND for US$ 260.5 million; Board approval date: June 21, 1994; effective date: November 23, 1994; executing agencies: PLN and Bureau of Environment and Technology.

5) Indonesia Second Rural Electrification (REII) FY95
This project is an extension of support for PLN's least cost rural electrification program, which includes renewable energy generation. ASTAE supervised the preparation and appraisal of the small geothermal and grid-connected mini-hydro components, to be implemented by PLN. A key policy component of the proposed project is the creation of a sustainable and efficient small power market. Understanding has been reached that central to the realization of such a market is the implementation of the small power purchase tariff and standardized power purchase contract. Total World Bank lending for the renewable energy components of this project is **US$18.0 million**. Loan 38450-IND for US$398.0 million; Board approval date: February 28, 1995; effective date: July 19, 1995; executing agency: PLN.

B) Prospective Loans, Credits and Grants

6) China Henan (Qinbei) Thermal Power FY96
This Bank-assisted project includes an electricity conservation component comprised of three site-specific projects, including the installation of high-efficiency lighting in industrial and commercial applications, the installation of variable-speed motor control systems and the use of efficient pumps for industrial and commercial utilization. In addition, there will be several technical assistance components for DSM support, such as training in commercial business planning and development and performance contracting. The total loan of this project is US$440.0 million, with an energy efficiency component of **US$11.2 million**. Appraisal: May 18, 1995; Board approval date: March 12, 1996.

7) India Orissa Power Sector Restructuring FY96
ASTAE is assisting in the preparation of a DSM component in the state's power sector reform program. DSM investments will include municipal water pumping and storage systems, motor rewinding and motor efficiency programs, DSM consumer load research linked to a proposed metering program and various DSM opportunities in the industrial, residential, commercial and agricultural sectors. The total Bank support for the DSM component is **US$104.0 million** with a total loan of US$350.0 million. Appraisal: February 17, 1995; Board approval date: March 21, 1996.

8) China Fuel Efficiency Boilers FY 97
This GEF stand-alone project is designed to promote energy efficiency through improvements in the efficiency of industrial coal-fired boilers. The proposed GEF support for this project is estimated at **US$30.0 million**. Appraisal: May 15, 1996; Board approval date: August 27, 1996.

9) Indonesia Solar Home Systems (SHS) FY97
ASTAE is assisting in the design and development of this project which would support investments funded and/or implemented by the private sector, NGOs and cooperatives. Within the framework of a least cost rural electrification strategy, solar home systems will be promoted to those areas not expected to receive grid-connected electrical services for at least three years. Possible components include commercially viable PV battery charging schemes and technical assistance to assist in developing energy strategies and strengthening institutional capacities. The total World Bank/GEF support for this renewable energy stand-alone project is **US$50.0 million**. Appraisal: May 15, 1996; Board approval date: September 24, 1996.

10) India Solar Thermal Power FY97
This project is designed to promote solar thermal power in India, replacing fossil fuel-based generating systems with environmentally benign technology. The project will finance an integrated solar combined cycle facility, incorporating a parabolic trough solar thermal field of 35-40 MW. ASTAE has offered assistance in the project's design, and will offer continued support in the appraisal and implementation of the project. This GEF stand-alone alternative energy project has support estimated at **US$30.0 million**. Appraisal: August 15, 1996; Board approval date: November 14, 1996.

11) India Rajasthan State Power Sector Restructuring FY97
This project will directly support the implementation of the power sector reform program in the state of Rajasthan in order to improve the efficiency of electricity service and enable the sector to gain access to capital markets and commercial financing. The DSM component is expected to incorporate load research, DSM strategy development, training, capacitor leasing programs, energy service companies, municipal water pumping, industrial energy conservation measures, agricultural programs and off-peak tariffs. The total World Bank commitment for this proposed project is US$350.0 million, with a DSM component estimated at **US$80.0 million**. Appraisal: July 15, 1996; Board Approval date: January 16, 1997.

12) Indonesia Renewable Energy for Small Power (RESP) FY97
This Bank-assisted project will support grid-based renewable energy projects in the private sector, including NGOs and cooperatives, and by PLN. The project will rely on a published small power purchase tariff and standardized power purchase contract to develop small private power generation facilities using biomass cogeneration, mini-hydro and mini-geothermal technologies. In addition, proposed geothermal and mini-hydro plants would be financed under the project, to be owned and operated by PLN. Technical assistance would include pre-investment costs, mini-hydro and mini-

geothermal assessment studies and capacity building. The total World Bank/GEF support for this renewable energy stand-alone project is **US$105.0 million**. Appraisal: June 15, 1996; Board approval date: January 28, 1997.

13) Sri Lanka Energy Services Delivery (ESD) FY97
ASTAE is managing this project, designed to encourage the provision of grid and off-grid energy services using renewable energy and DSM investments. The proposed project includes an ESD Credit Line Component to provide financing to the private sector, NGOs and cooperatives for pre-grid solar PV electrification, village hydro schemes, rehabilitation of grid-connected tea estate mini-hydro sites and other renewable energy investments. Other components include a grid-connected pilot wind farm and technical assistance, which would support a DSM Action Plan, capacity strengthening of the CEB and institutional development to ESD Credit Line subproject developers. Total World Bank/GEF support for this stand-alone alternative energy project is projected at **US$39.1 million**. Appraisal: June 13, 1996; Board approval date: February 25, 1997.

14) India Uttar Pradesh State Power Sector Restructuring FY97
This Bank-assisted project will support an ultimate objective of creating conditions for sustainable development of its power industry and improving the efficiency and quality of the electricity services in the State. ASTAE is assisting in the design and development of a DSM component investment strategy in the state's power sector reform program. The proposed DSM component includes investments in end-use consumer load research linked to a proposed metering program, industrial energy conservation (rewinding of electrical motors, in-plant load management and technologies), sugar cogeneration, and agricultural and commercial sector DSM. Total DSM component: **US$70.0 million** with a total loan of US$350.0 million. Appraisal: September 5, 1996; Board approval date: February 25, 1997.

15) Pakistan Energy Efficiency & Conservation FY97
This proposed project would support supply-side measures, prospective commercialization programs for energy efficiency improvements for key end energy user sectors, establish an energy efficiency investment revolving fund and provide technical assistance for capacity building and training components. The Bank support for this stand-alone energy efficiency project is **US$50.0 million**. Appraisal: September 15, 1996; Board approval date: May 15, 1997.

16) China Energy Conservation FY97
This GEF stand-alone program is aimed at reducing greenhouse gas emissions through the promotion of energy conservation investments. The total commitment by the GEF for this project is currently **US$35.0 million**. Appraisal: March 15, 1997; Board approval date: May 20, 1997.

Total Power Capacity Installed and Avoided in Alternative Energy World Bank/GEF-Assisted Projects/Project Components (FY 93-97)

Project Name	Total Renewable Energy Installed (MW)	Total Capacity Avoided (MW)
Lao PDR Provincial Grid Integration	-	-
India Renewable Resources Development	188	-
Thailand Distribution System & Energy Efficiency	-	238
Indonesia Sumatra & Kalimantan Power	-	27.4
Indonesia Second Rural Electrification	27.5	-
China Henan (Qinbei)Thermal Power	-	17.5
India Orissa Power Sector Restructuring	-	234
China Fuel Efficiency Boilers	n/a	-
Indonesia Solar Home Systems	10	-
India Solar Thermal Power	40	-
India Rajasthan State Power Sector Restructuring	-	240*
Indonesia Renewable Energy for Small Power	122*	-
Sri Lanka Energy Services Delivery	30*	18*
India Uttar Pradesh State Power Sector Restructuring	80	320
Pakistan Energy Efficiency	-	n/a
China Energy Conservation	-	n/a
TOTAL	**497**	**1095**

* projected figures
n/a - not available

ASTAE Use of Local Consultants: July 1994 - December 1995							
Name of Consultant/Firm	**Nationality**	**Project/Activity**	**Task**	**Dates**	**Weeks**	**Amount (US$)**	**Funding Source**
Energy Conservation Center of Thailand	Thailand	Lao PDR Twinning Arrangement	Lao PDR Commercial Sector Energy Audit Report	10/26/94 - 01/01/95	3.4	7,300	Netherlands
PT Spektra Matrika Indah	Indonesian	Indonesia Renewable Energy Development	Preparation of proposed Renewable Energy Development Project in Indonesia	01/16/95 - 03/21/95	9.0	42,116	Netherlands
The Agency for the Assessment and Application of Technology (BPPT)	Indonesian	Indonesia Renewable Energy Development	Preparation of proposed Renewable Energy Development Project in Indonesia	01/16/95 - 04/12/95	18.0	8,325	Netherlands
Energy Economy & Environmental Consultants	Indian	Orissa State Power Sector Reform Project	Prefeasibility Studies in Orissa	02/05/95 - 03/31/95	8.0	6,000	Japan Grant
Innotem Engineers Pvt. Ltd.	Indian	Orissa State Power Sector Reform Project	Motor Rewinding Study	02/05/95 - 09/30/95	10.0	7,000	Japan Grant
Energy Conservation Center of Thailand	Thai	Lao Commercial Sector DSM	Lao PDR Commercial Sector Energy Audit Workshop	02/24/95 - 06/01/95	6.8	14,400	Netherlands
Energy Conservation Center of Thailand	Thai	Lao Commercial Sector DSM	Lao PDR Commercial Sector Energy Audit Workshop	02/24/95 - 03/03/95	2.4	2,400	Netherlands
Dalal Consultants & Engineers Pvt. Ltd.	Indian	Orissa State Power Sector Reform Project	Prefeasibility study on Pilot DSM Municipal Water Project	05/08/95 - 08/31/95	36.0	20,000	Japan Grant
National Productivity Council	Indian	U.P. State Power Sector Reform Project	In-Plant Load Management	05/08/95 - 09/31/95	40.0	30,000	Japan Grant
Tata Energy Research Institute	Indian	U.P. State Power Sector Reform Project	Agricultural DSM	06/01/95 - 11/31/95	60.0	45,000	Japan Grant
Consultancy and Professional Services Pvt. Ltd.	Sri Lankan	Sri Lanka Energy Services Delivery	Project Pipeline Development	06/05/95 - 09/25/95	16.0	52,775	Netherlands
Lanka Asia Management Systems Co. Pvt. Ltd.	Sri Lankan	Sri Lanka Energy Services Delivery	Credit Line Development	06/15/95 - 11/01/95	20.0	52,632	Netherlands
PT. Business Consultancy Indonesia	Indonesian	Indonesia Solar Home Systems	Indonesia Renewable Energy Development Project - Solar Home Systems Component	07/17/95- 01/15/96	17.0	34,510	Netherlands
						322,458	

Attachment 3

ASIA TECHNICAL DEPARTMENT
DISSEMINATION OF BEST PRACTICES AND LESSONS OF EXPERIENCE
WORKSHOPS/SEMINARS/BROWN-BAG LUNCHES
FY95

Location	Seminar/Description	Date	Sponsor	Speaker/Presenter	Audience/Participants	Impact on Lending/Sector Work
World Bank	Brown Bag Lunch: Use of Load Research in DSM Planning and Design	December '94	ASTAE	M. Hajny, Metering Engineering, Inc., Principal	Bank Staff	South Asia Country Department II (SA2) introduced load research into DSM program assistance
	India Renewable Research Development Project: The Photovoltaics Component AFTES Workshop on Renewable Energy Strategy for Africa	February '95	AFTES	A. Cabraal, ASTAE, Renewable Energy Specialist	Bank Staff	Disemmination of Asia Region experience to Africa Region Bank staff
	1995 IEA Workshop on Role of Financing Organizations in the Development & Deployment of Renewable Energy Technologies	May '95	USDOE/NREL/IEA	A. Cabraal, ASTAE, Renewable Energy Specialist	Bank Staff, Consulting Companies, NGOs	Explained the Bank's Asia Region renewable energy program to the International Energy Agency, NGOs, and Bank staff in other regions
	Seminar: "Private Power, Environment, and Load Growth: Utility Planning in Turbulent Times"	April '95	SA1EF/ASTAE	D.G.D.C. Wijeratna, Ceylon Electricity Board (CEB), Addl. General Manager (Planning)	Bank Staff	Helped shape Sri Lanka ESD Project: Standard Power Purchase Agreement for small power producers
Washington, D.C.	Global Energy Efficiency Initiative (GEEI), Working Group (Washington, D.C.)	July '94	GEEI	L. Schaeffer, ASTAE, Program Manager	NGOs	International NGO networking
	National Renewable Energy Laboratory Village Power Workshop (Washington, D.C.)	October '94	NREL	M. Cosgrove-Davies, ASTAE, Solar Thermal, PV Engineer	Energy Modelers	Peer review of ASTAE least cost renewable energy planning tool
	NREL Workshop on Economics & Financing of Renewable Energy Based Village Power Projects (Washington, D.C.)	March '95	USDOE/NREL	M. Cosgrove-Davies, ASTAE, Solar Thermal, PV Engineer	US Govt., Int. Industry, NGOs	
U.S.	NREL Rural Energy Modelling Workshop : "Economic Analysis of Renewable Energy Systems" (Golden, CO)	August '94	USDOE/NREL	M. Cosgrove-Davies, ASTAE, Solar Thermal, PV Engineer	Government, Industry	ASTAE-developed tool has been used in Indonesia (PLN rural electrification planning) and will be used in Vietnam and Sri Lanka
	Second World Bank Alternative Energy Study Tour (California/Nevada)	September '94	PMDTR/ASTAE		Bank Staff, IEN, IFC, OED	ASTAE sponsored study tours provided training for 8 Asian Power Sector Task Managers
	Forum on Renewable Energy: A Key to Sustainable Growth in the Asia/Pacific Region (Hawaii)	December '94	ASTAE/USDOE	L. Schaeffer, ASTAE, Program Manager	Technical NGOs, Government Officials, Power Utility Reps., and Academics	Brought together Asian utility NGOs and private sector stakeholders
	First World Conference on Photovoltaic Energy Conversion (Hawaii)	December '94	ASTAE/USDOE	L. Schaeffer, ASTAE, Program Manager	Technical NGOs, Government Officials, Power Utility Reps., and Academics	1. Provided External Peer Review of ASTAE PV Best Practices Report
	Best Practices for PV Solar Home System Projects, First World Conference on Photovoltaic Energy Conversion (Hawaii)	December '94	IEEE	M. Cosgrove-Davies, ASTAE, Solar Thermal, PV Engineer	Technical, NGOs, Govt. Officials, Power Utility Reps., Academics	2. Brought together Asian utility NGOs and private sector stakeholders
	Least Cost Analysis of Renewable Energy Projects, First World Conference on Photovoltaic Energy Conversion (Hawaii)	December '94	IEEE	M. Cosgrove-Davies, ASTAE, Solar Thermal, PV Engineer	Technical, NGOs, Govt. Officials, Power Utility Reps., Academics	International discussion of ASTAE Renewable Energy Planning Tool
	Workshop on Power Projects in India: "Energy Efficiency in India - Issues & Opportunities" (New York)	June '95	Center for Business Intelligence (CBI)	S. Padmanabhan, ASTAE, DSM Planner	International Industry, Power Utility Representatives, Government of India Officials	International Stakeholders Conference to promote private sector investments in India DSM
Philippines	DSM Workshop for Philippines Power Utilities (Manila, Philippines)	June/July '94	Philippines Department of Energy/ASTAE	C. Tager, ASTAE Senior Operations Officer	Distribution Utilities, Government Officials - Philippines	Led to Philippines IDF (see Box 2)
Lao PDR	Commercial Sector Audit Workshop for Lao PDR Power Utility Staff (Vientiane, Lao PDR)	March '95	Energy Conservation Center of Thailand (ECCT)/ASTAE	C. Tager, ASTAE Senior Operations Officer	Utility Staff, Government Officials - Lao PDR	Twinning Arrangement (see Box 3)
Other	Seventh International Symposium on Solar Thermal Concentrating Technologies (Russia)	September '94	Int. Energy Agency through Solar PACES Program	M. Cosgrove-Davies, ASTAE, Solar Thermal, PV Engineer	Technical Specialists and Government	Private sector exposure to potential for World Bank/GEF Solar Thermal Project

ASIA TECHNICAL DEPARTMENT
DISSEMINATION OF BEST PRACTICES AND LESSONS OF EXPERIENCE
WORKSHOPS/SEMINARS/BROWN BAG LUNCHES
FY96 (ACTUAL)

Location	Seminar/Description	Date	Sponsor	Speaker/Presenter	Audience/Participants	Impact on Lending/Sector Work
World Bank	Exhibit: "Energy Alternatives for Development" for the Environmentally Sustainable Development (ESD) Conference. Renewable Energy and Energy Efficiency Technologies were on display, World Bank "H" Building Lobby	October '95	ESDVP	ASTAE	Bank Staff	Broaden international awareness of World Bank/GEF Alternative Energy Program in Asia
	Building-Integrated, Grid-Interactive Solar Photovoltaics (PV) - Status of Technology, Applications and Future Prospects	September '95	ASTAE	L.Slominski and R.Blieden, United Solar	Bank Staff	First introduction to Bank staff of rapidly evolving opportunities for grid-connected PV
Washington, D.C.	Biomass Users Network (Washington, D.C.)	October '95	ASTAE	S. Padmanabhan, ASTAE, DSM Planner	Board of Directors, Biomass Users Network	U.S. Government and Industry networking
India	Delivery of Energy Efficiency Services by the Private Sector (Bombay, India)	July '95	SA2EI/IFC/ASTAE	S. Padmanabhan, ASTAE, DSM Planner	Utility Staff, Govt., Private Sector	Promoted private sector interest in DSM investment
	Technology Development and Commercialization DSM (Bombay, India)	July '95	Industrial Credit and Investment Corporation of India	S. Padmanabhan, ASTAE, DSM Planner	Utility Staff, Govt., Private Sector	
	Workshop: Advancing Sugar Cogeneration Policy (Uttar Pradesh, India)	July '95	SA2EI/ASTAE	S. Padmanabhan, ASTAE, DSM Planner	Utility Staff, Govt., Private Sector	Helped change policy regarding cogeneration initiatives
	DSM Workshop for Rajasthan State Electricity Board (RSEB) (Jaipur, India)	November '95	RSEB/SA2EI/ASTAE	S. Padmanabhan, ASTAE, DSM Planner	Utility Staff, Government, Private Sector	Stakeholders initiation into DSM process
Lao PDR	Twinning of Electricite du Laos (EdL)-Lao PDR with Energy Conservation Center of Thailand (ECCT)-Thailand: Commercial Sector Audit Workshop for Lao PDR Power Utility Staff (Vientiane, Lao PDR)	July '95	Thailand ECCT/Lao PDR EdL/ASTAE	C. Tager, ASTAE Senior Operations Officer	Utility Staff, Government Officials - Lao PDR	Twinning (see Box 3)
Malaysia	Twinning of EdL-Lao PDR with Tenaga-Malaysia (Kuala Lampur, Malaysia)	July '95	EA1IN/ASTAE	Tenaga	EdL Utility Staff and Managers	Twinning (see Box 3)
Philippines	CFL Demand-Side Management Strategy Development and Lighting Efficiency Study in the Philippines (FATL and MERALCO)	July '95	Philippines Department of Energy/ASTAE	C. Tager, ASTAE Senior Operations Officer	Utility Staff, Government, Industry	Freestanding TA - Conclusive affect DSM in all Asia countries
	IDF DSM Collaborative Process- Philippines Energy Regulatory Board (ERB) with Oregon Public Utility Commission (Manila, Philippines)	July '95	ERB/EA1IN/ASTAE	ERB, Oregon PUC	Utility Staff, Government, Private Sector	Implementation of World Bank IDF (see Box 2)
Sri Lanka	Sri Lanka Energy Services Delivery Project - Efficiency Building Code (EEBC) Stakeholders' Launch Workshop (Colombo, Sri Lanka)	October '95	Ceylon Electricity Board (CEB) and Urban Development Authority	C. Tager, ASTAE Senior Operations Officer	Public and private sector stakeholders, including utility staff and other entities.	Initiated an ongoing DSM public/private sector collaboration (Sri Lanka ESD Project Preparation)
	Sri Lanka Energy Services Delivery Project - Credit Line Stakeholders' Workshop (Colombo, Sri Lanka)	November '95	ASTAE	M. Cosgrove-Davies, ASTAE, Solar Thermal, PV Engineer	Public and private sector stakeholders, including NGOs, financial institutions and private sector developers.	Helped design of ESD Credit Line

ASIA ALTERNATIVE ENERGY UNIT STAFF

TEAM MEMBERS

Loretta Schaeffer	Program Manager
Carolyn Tager	Senior Operations Officer
Anil Cabraal	Renewable Energy Specialist
Mac Cosgrove-Davies	Solar Thermal, PV Engineer
Srinivasan Padmanabhan	Demand Side Management Planner
Rangaswamy Vedavalli	Principal Energy Economist
V. Susan Bogach	Energy Economist
Eric J. Sandman	Energy Efficiency Specialist
Andrew S. Yim	DSM Specialist
Scott Piscitello	Biomass Engineer
Jas Singh	Technical Specialist
Soon Hee Kim	Operations Analyst

12/31/95

ASTAE KEY FUNDING EVENTS

Year	Month	Agency	Event	Amount	Source
				US$	
1992	January	WB	Creates ASTAE with 2 WB staff and 1 seconded USDOE renewable energy consultant	$327,000 1/	WB/USDOE
	March		*ASTAE Donors Meeting #1 (WB/ASTAE funding proposal to donors)*		
	May	ASTAE	Submits funding proposal (revised) to Netherlands DGIS ($4,798,500)		
	July	USAID	Approves ASTAE funding through USAID/WB Trust Fund	$200,000	USAID
	July	UNEAP	Submits funding proposal to Netherlands DGIS for ASTAE support ($607,392)		
	September	USDOE	Funds to USTDA Trust Fund for ASTAE support	$200,000	USDOE/USTDA
	November	WB	Creates Interim Fund for ASTAE while awaiting donor funding	$500,000 2/	WB
1993	March	ASTAE	Submits funding proposal to USDOE ($3,500,000 for ASTAE)		
	May		*ASTAE Donors Meeting #2*		
	May	NETH. DGIS	Netherlands Trust Fund Arrangement signed	($4,401,180) 3/	NETH. DGIS
	June	NETH. DGIS	Netherlands Trust Fund Tranche #1	$1,558,290	NETH. DGIS
	September	NETH. DGIS	Netherlands DGIS/UNEAP Funding Agreement signed	($479,520) 4/	NETH./UNEAP
	October	USDOE	Funds to USTDA Trust Fund for ASTAE support	$250,000	USDOE/USTDA
	December	NETH. DGIS	UNEAP Trust Fund Tranche #1	$69,500	NETH./UNEAP
	December	NETH. DGIS	Netherlands Trust Fund Tranche #2	$821,140	NETH. DGIS
1994	April		*ASTAE Donors Meeting #3*		
	September	NETH. DGIS	Netherlands Trust Fund Tranche #3	$914,020	NETH. DGIS
	September	USDOE	USDOE Funding Agreement signed	($3,000,000) 5/	USDOE
	October	USDOE	USDOE Trust Fund Tranche #1 (for ASTAE)	$685,000	USDOE
	October	WB	Japan PHRD Grant approved for use for India DSM	$700,000	WB/JAPAN PHRD
	November	NETH. DGIS	Netherlands Trust Fund Tranche #4	$583,220	NETH. DGIS
	December	NETH. DGIS	UNEAP Trust Fund Tranche #2	$190,880	NETH./UNEAP
1995	April	WB	Approval IDF Grant for Philippines DSM capacity building	$245,000	WB/IDF
	May		*ASTAE Donors Meeting #4*		
	September	WB	Approval Project Preparation Facility (PPF) Advance for Sri Lanka Energy Services Delivery	$340,000	WB/GEF
1995	September	NETH. DGIS	UNEAP Trust Fund Tranche #3	$264,000	NETH./UNEAP
	October	USDOE	USDOE Trust Fund Tranche #2 (for ASTAE)	$314,000	USDOE
	October	WB	Approval GEF-Project Development Facility (PDF) Grant for Sri Lanka Energy Services Delivery	$200,000	WB/GEF
	October	WB	Approval GEF-Project Development Facility (PDF) Grant for China Renewable Energy	$140,000	WB/GEF
1996	March	NETH. DGIS	UNEAP Trust Fund Tranche #4	$117,700	NETH./UNEAP
Projected:					
	May		*ASTAE Donors Meeting #5*		
	May	USDOE	USDOE Trust Fund Tranche #3 (for ASTAE)	$180,000	USDOE
	September	USDOE	USDOE Trust Fund Tranche #4 (for ASTAE)	$350,000	USDOE
	December	NETH. DGIS	Netherlands Trust Fund Tranche #5	$608,000	NETH. DGIS
1997	April	USDOE	USDOE Trust Fund Tranche #5 (for ASTAE)	$401,000	USDOE

Note: Does not include annual World Bank support.

Footnotes:

1/ Includes $227,000 committed by WB plus secondment by USDOE of Anil Cabraal and other consultants to ASTAE during FY92 (January-June 1992).

2/ Reimbursed to WB in June 1993, following receipt of Netherlands funding.

3/ To be disbursed in five tranches over 3-year period. Retroactive to July 1992.

4/ To be disbursed in tranches over 3-year period.

5/ To be disbursed in tranches of $1,000,000 per year over 3-year period, of which ASTAE receives $700,000 per year. Retroactive to July 1994.

Neth. DGIS: Netherlands Directorate General for International Development
UNEAP: United Nations Energy and Atmosphere Programme
USDOE: United States Department of Energy
USTDA: United States Trade and Development Agency
WB: World Bank
USAID: United States Agency for International Development
IDF: World Bank Institutional Development Fund Grant
GEF: Global Environmental Facility Grant
PPF: Project Preparation Facility
PDF: Project Development Facility - GEF

Attachment 6