

# US-AEP Sri Lanka

## FY 2004 Work Plan

### Country Strategy

#### Background

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The US-AEP Program in Sri Lanka is a relatively small program located in the USAID mission. The absence of a bilateral environmental and energy program in USAID/Colombo provides US-AEP an opportunity to conduct a complementary environmental and energy programs along with SARI/Energy regional program. The Colombo MPP defines the role of US-AEP as "Promotion of cleaner technologies and improving energy use efficiency." Most US-AEP activities fit in well with USAID/Sri Lanka primary SO on economic growth "Increased Sri Lanka Competitiveness in the Global Marketplace." US-AEP work on urban governance and environment awareness will complement the USAID Sri Lanka SO "Politics and Governance Made More Nonviolent and Inclusive." In addition US-AEP strengthens activities of the US Embassy Economic and Commercial office. Services of US-AEP Sri Lanka are well recognized by the private sector, ADB, World Bank, UN, GSL, and NGOs. Experience in implementing successful programs in Asia, availability of strategic tools to promote partnerships between US and Asian entities and rapid access to environmental & commercial information resources and US institutions have been our strength.

The USAID Natural Resources and Environmental Policy Project (NAREP) between 1992-98 provided the initial momentum and foundation for most environmental management initiatives including the EIA process in Sri Lanka. Following NAREP, the WB took the lead in environmental activities via its Environmental Action Plan 1 project (EAIP). Recently the World Bank has decided to incorporate environment into sector plans and to terminate EAIP project and ADB is in the process of expanding its assistance to environmental related activities with the Clean Air Initiative and water sector projects. However there is no clear indication from ADB on industry related programs.

Less than satisfactory enforcement of environmental regulations due to economic and political reasons, inadequate awareness of the health impacts resulting in due to poor enforcement of regulations have negative effects on environmental performance. However the agreement between the United National Front Government and the LTTE on non-aggression has changed the Sri Lanka outlook, locally and internationally. Government of Sri Lanka advocates economic development as a mechanism to reduce poverty, reduce the geographic unevenness in resource distribution and create an enabling environment for trade and investment. GSL policy is outlined in the document on "Regaining Sri Lanka" and recently the donors pledged 4.5 billion US \$ to help Sri Lanka during the next four years.

GOSL signed a free trade agreement between India and Sri Lanka three years ago and amended it recently to include more items and started negotiating a free trade agreement with USA and signed the framework agreement, already. Sri Lanka is in the process of upgrading its ports, road and telecom networks, airports and other infrastructure essential for rapid economic growth. New changes and the geographical location of Sri Lanka and its friendliness with other South Asian countries could make Sri Lanka a regional hub for trade if the country utilizes its educated and healthy, labor and strategically improves its competitiveness and governance. Country is showing signs of a slow recovery with stock market and tourism industry showing improvements. However the expected foreign direct investments are yet to come. Long-term sustainability and the competitiveness of industries, services and exports depend much on strong environmental performance, reliable supply of energy at an affordable cost along with improved energy efficiency. Environmental management is a cross cutting theme, therefore, it is necessary to integrate development programs between sectors to maximize environmental performance and long-term sustainability.

Sri Lanka can be considered to consist of three regional economies. The Greater Colombo region with per capita GDP about US \$ 1,400 (70% higher than national average) includes the majority of commercial and industrial establishments. The Southern and Central regions, primarily depending on agriculture, have a GDP between US \$ 600 – 900. The war affected North and East areas, where the economic growth is virtually zero, have a GDP of about US \$ 400. Therefore the development challenges, environmental issues and the demand for technologies and services also vary geographically. As many other donors USA is also extending its assistance to GSL to achieve accelerated economic growth while balancing the programs to ensure peace dividends reach all sectors in the country. Capacity to absorb development aid is very low in Sri Lanka primarily due to inefficient government procedures and lack of human resources.

#### Our Mission

"Promote sustainable economic growth and an improved quality of life in Sri Lanka by working to make Sri Lankan cities cleaner and more efficient, its industries less polluting and more competitive, and its laws and regulations better able to protect the environment. In doing so we will help transfer to Sri Lanka environmental beneficial technologies, services and knowledge, especially from United States."

Our long-term objectives are to:

- Improve the capacity of the Government of Sri Lanka, private sector and civil society to manage air pollution, water pollution and municipal, medical and hazardous waste management.
- Increase awareness and improve dialogue among the government, private sector and general public on pollution prevention, energy efficiency and standards.
- Transfer U.S. developed technology, experience and best practices to facilitate sustainable development in Sri Lanka with special emphasis on energy and environment.

The over all goal of the USAID/US-AEP regional program is to work towards "Environmentally Sustainable Growth and Improved Quality of Life." We have set our Strategic Objective of US-AEP as "Cleaner Cities and Industries in Asia." US-AEP program uses three Intermediate Results (IR) groups for program management with each IR having sub IR's.

1. Improved Environmental Governance
2. Improved Urban Environmental Management, Technologies and Resource Efficiency
3. Improved Industrial Management, Technologies and Resource Efficiency

### **Sri Lanka Country Strategy**

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In order to help Sri Lanka to achieve a high level of competitiveness in the global market place through sustainable economic growth and to create the enabling environment to reap the benefits of the new found peace, we will use the limited resources and staff in US-AEP program to; Identify critical areas of engagement based on host country and US mission priorities. US-AEP programs will complement the activities of USAID/Sri Lanka and the Economic and Commercial Section of the US Embassy.

Use our rapid response tools such as TSSC, EPSG and CSG to address and find solution to urban and industrial environmental issues in the areas such as air quality management, waste (medical, municipal and hazardous) management, urban service delivery, pollution prevention, industrial and urban energy efficiency, surface water pollution and increased use of clean energy sources. Leverage resources of other development partners primarily the World Bank, ADB and UN and bring in innovative service delivery systems by partnering with ASE, ICMA, US companies and other US Institutions. US-AEP will match strong Sri Lanka partners to collaborate with US partners. Capitalize on environmental management experience of USEPA, US-AEP sister programs in Asia and we will continue to provide exposure tours and trade show participating opportunities to Sri Lanka to improve the understanding of potential technology interventions to address environment and energy issues.

We will continue to look for the potential new partnerships between American and Sri Lankan institutions including private sector partnerships. To create enabling environment for effective

enforcement, US-AEP program will add emphasis on engaging citizens, policy makers and school children in environmental dialogue.

## **Relationship to USAID and other Donor Programs**

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In the newly developed/revised USAID Sri Lanka Strategy 2003- 2007 we have position US-AEP Sri Lanka program under two SO's, namely, the SO4 on "Foundation Set for Rapid and Sustainable Economic Growth" and SO5 on "Politics and Governance Made More Nonviolent and Inclusive." Most industry and energy activities will relate to the SO4 and urban service delivery and awareness activities have linkages to SO5. In addition our technology transfer components are finding ways to support the activities of the Special Objective (SPO) on "Benefits of Peace Promoted" where USAID/Office of Transition Initiative play a lead role in conducting rehabilitation and training programs to demonstrate the "benefits of the peace" around the country. US-AEP directly supports the activities of several USAID sponsored industry clusters created under The Competitiveness Initiative, including the industry clusters related to tourism, rubber, coir and ceramics. For example, we helped clusters on information and technical assistance on environmentally technologies and energy efficiency. US-AEP played a key role in securing two Mission Incentive Fund (MIF) grants, namely, the "Alliance Supporting Environment and Community through Ecotourism (SENCE), a grant of 900,000 US \$ and "Sustainable Coastal Tourism in Asia (SCOTIA), a grant (amount to be decided) to support the tourism cluster during the next three years. Last year we won a Global Development Alliance grant for "Sri Lanka Clean Air Initiative" where some of the activities are included in the FY04 workplan. US-AEP country director assists the USAID Sri Lanka mission by helping in the functions of the Mission Environmental Officer and the management of the SARI/Energy program. In absence of other environmental program, our assistance may be sought in the introduction of the Tropical Forest Conservation Act (TFCA) related programs to Sri Lanka.

Economic and Commercial office in the Embassy often use our assistance on environment and energy related activities that include support to the Embassy commercial and environmental work in Maldives. US-AEP and SARI/Energy staff identifies local experts for programs and activities of the Embassy and help write the Country Investment Climate, Mission Performance Plan and other related cables.

World Bank considers US-AEP as an entity that can deliver appropriate rapid response/support to development programs in Sri Lanka. Our key collaborations are through the air quality management and solid waste management programs. US-AEP catalyzed Sri Lanka programs on both sectors by creating alliances and encouraging private sector participation. City of Colombo MSW management and the upcoming vehicle inspection and certifications are two of the key examples.

Asian Development Bank collaborated with US-AEP on pollution prevention and air quality management through the Clean Industry Development Project (CLIND) and Clean Air Initiative for Asia (CAI). In the future we may find niches in ADB Sri Lanka program through SCOTIA on coastal zone management. However ADB decided not to extend the CLIND project.

UNIDO in association with NCPC implements cleaner production activities in Sri Lanka with the support help of German Assistance. As in the past US-AEP will share resources to strengthen the NCPC activities and the Country Director of US-AEP is a member of the National Steering Committee of NCPC. In FY2004 we may help NCPC to host National Cleaner Production Awards and to train more CP auditors. Director US-AEP also serves as a member of the National Committee for the Global Environmental Facility (GEF) small grant program managed by UN Development Program that complements US-AEP/TAF grant program. UN agencies are supporting the expansion of the usage of renewable energy and we share information and co-ordinate through activities by US-AEP and SARI/Energy.

In Sri Lanka European Union (EU), German Technical Corporation (GTZ), Japanese International Corporation Agency (JAICA), Norway and The Netherlands support limited number of environmental projects and the in FY2004 US-AEP intend to improve co-ordination/interaction with these donors during the coming years. Last year Japanese and US-AEP assistance went into fund a NGO to conduct road use ethics and vehicle maintenance and US-AEP complements the GTZ long-term project to train motor mechanics in Sri Lanka.

## Strategy Development Process

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US-AEP Sri Lanka strategy evolved over the years and the focus of the program improved with time. We were able to better understand the priority areas of other donors and the Government, especially the program approaches of ADB and WB through close co-ordination. Regular contacts with GSL, donors and five years of working within the USAID Mission and geographically smaller size of the country helped us to adopt an ongoing strategy development process that can respond to country needs and to share our ideas with GSL and others on continuing basis.

During the last two years US-AEP programs were positioned to complement the activities of the USAID bilateral economic growth program. Also in the strategy development we tried to complement the USAID bilateral programs on governance by expanding activities in urban service delivery, increased environmental awareness and citizen participation. FY2004 strategy takes into account the potential changes in the country due to the peace process such as opening up of markets, need for improved technologies to prevent pollution and the changing consumer behavior due to improved income.

### US-AEP Partners and Partner Tools

US-AEP mobilizes the expertise of a number of US agencies and employs a variety of tools designed and offered by US-AEP partners to implement US-AEP Sri Lanka country program. The Institute of International Education (IIE) manages the Environmental Exchange Program for Sustainable Growth (EPSG) that facilitates exposure visits and study tours to USA and within Asia for Sri Lankans and travel of US entities to Sri Lanka. EPSG helps in transfer of technology, best practices and experience to Sri Lanka and to enhance the sustainability and visibility of our programs. EPSG response time and the tour design capability is commendable and we often use EPSG programs strategically to leverage other donor resources. The Council of State Government (CSG) partnered with US-AEP to develop two grant mechanisms to facilitate technology transfer, namely, immediate response grants (IRG) to individual institutions where grants up to \$25,000 is offered and much larger (about 150,000\$) State Environmental Initiative (SEI) grants that facilitate partnering U.S. states with counterparts in Asia to address environmental and efficiency issues. Alliance to Save Energy (ASE) and International City Managers Association (ICMA) are two of the key professional partners conducting programs in Sri Lanka. Over all co-ordination and the US-AEP program management support is provided by the Technical Support Service Contract (TSSC) managed by the Louis Berger Inc. TSSC and IIE both has regional offices in Bangkok, Thailand, in addition to the Washington D.C. offices.

## List of Projects

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1. **Sri Lanka Clean Air Initiative** -- Reduction of health impacts due to vehicular pollution, improved air quality monitoring, increased enforcement of air quality standards and regulation. Enhanced cross cutting benefits due to air quality improvement such as tourism and quality of life

2. **Pollution Prevention, Energy Efficiency and Clean Energy Development** -- Increased adaptation of pollution prevention and energy efficiency to maximize profits and improved long-term sustainability by industry

3. **Improved Urban Service Delivery** --To improve Public-Private partnerships to manage solid waste and to make Municipal Solid Waste Management a profitable business. Improved financial planning and management at Municipalities. Increased dialogue and sharing of best practices among local government authorities.

4. **Increased Environmental awareness and Citizen Participation** -- Engage citizens in environmental dialogue and decision making to promote transparency and good governance. Improved understanding of causes and effects of human activities on the environment

## Activities

### 1. Sri Lanka Clean Air Initiative

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**Purpose:** To manage mobile and industrial emissions through improved legislation, enforcement and public awareness.

**Primary Program Areas:**

IR1: Improved Environmental Governance

IR2: Improved Urban Environmental Management, Technologies and Resource Efficiency

**In-country partners:** Ministry of Environment and Natural Resources, Ministry of Transport, Highways and Civil Aviation, Air Resource Management Center (AirMac), Department of Motor Traffic, Sri Lanka Traffic Police, Three Wheeler Owners Association, Private Bus Owner Association, Motor Traders Association, Central Environmental Authority (CEA), Industrial Services Bureau (ISB), University of Moratuwa, Ceylon German Technical Training Institute, Environment and Management Lanka (Pvt.) Ltd. and City of Colombo

**International Partners:** Environmental Systems Products (ESP), National Center for Vehicle Emission Control and Safety (NCVECS), University of Colorado, California Motor Repair Bureau, C-TRADE, Louis Berger Inc., Asian Development Bank (ADB), World Bank (WB) and German Technical Corporation (GTZ)

**Description:** Air quality in the City of Colombo and other major cities is deteriorating rapidly primarily due to mobile and industrial emissions. Mobile sources contribute up to 80% of the air pollution in Sri Lanka and about 60% of the vehicles are registered in the Western Province where 70% of the population resides. In FY 2000 USAEP Sri Lanka identified air quality improvement as a key area to engage. Since then we have provided training assistance, exposure tours, information and most importantly helped and provided forums for the large number of stakeholders (public, private and NGO's) to work together. We were able to revitalize the implementation of CleanAir 2000 action plan made by the GSL in 1992, face lead out of gasoline, design fuel and mobile emission standards and import regulations for used vehicles. Lead level in Colombo ambient air decreased by about 90% within six months after lead face out. Sri Lanka is in the process of introducing vehicle testing and certification and designing the Clean Air 2005 program with the motto of "Clean Air: Healthy Nation", which includes management of stationary sources, environmental awareness including health aspects and preparation of an emission inventory for Sri Lanka. The primary driver for this project is the increased incidence of respiratory diseases in urban areas and the recognition of the problem by the public. World Bank and US-AEP are the key donors supporting air quality improvement activities in Sri Lanka. Last year US-AEP helped Sri Lanka stakeholders on air quality management to develop Clean Air 2005 action plan. This year we will continue to play a major role in the Air Quality Management in Sri Lanka.

Activity 1: Understanding present level mobile air pollution and capacity building to implement vehicle testing and certification

ESB and ISB will process the remotely sensed data collected (more than 100,000 vehicles) and finalize the results. Target is to set the cutoff not to put more than 10% of the vehicles out of the road at the start of the implementation of the proposed vehicle certification program in 2004, for social reasons. Based on the assessment in August 2003 by NCVECS and California Automotive Repair Bureau a series of training programs conducted to train traffic police, mechanics for vehicle repair and staff of the motor traffic commissioner's office will be conducted. NCVECS will develop the training materials and deliver three training sessions in collaboration with University of Moratuwa and Ceylon German Technical Training Institute. First phase of the training is on general concepts related to chemistry and pollution pathways, tests and equipment. Second phase will be primarily for instructors who train mechanics and will include detailed instructions and hands on exercises on the repair of vehicles failing the inspection tests. University of Moratuwa and NCVECS will also incorporate their observations on impacts of driving and vehicle maintenance habits of Sri Lankans in the program and

highlight the health benefits of reduction of emissions with improved driving habits and economic savings.

- Profile of emission levels of different types of vehicles and identification of priority areas to implement the testing and certification system (December 2003)
- Development of material for awareness work on emission reduction (Feb. 2004)
- Development of course materials for vehicle repairs, easy diagnostics (March 2004)
- Five training of trainers workshops in Sri Lanka (March – April 2004)
- Capacity building of more than 30 motor vehicle examiners and 200 traffic police officers to the level suitable to implement the proposed vehicle testing (May 2004).

#### Activity 2: Mobile emission, fuel and vehicle import standards

In FY2004 we will continue to work with Sri Lanka stakeholders to announce fuel quality, emission and vehicle importation standards. A number of interventions will be planned to reduce the emissions from three wheelers and motor cycles that use two stroke engines.

- Fuel standards announced (February 2004)
- Vehicle emission and importation standards announced (May 2004).
- Policy on two stroke vehicles designed and implemented (June 2004)

Activity 3: Ambient air quality monitoring, emission inventory, modeling and emission trading  
Air quality monitoring is primarily a Govt. activity and lack of funds has affected the quality of the programs on ambient air monitoring. In absence of a systematic ambient air quality program it is difficult to assess the impact of air quality improvement efforts. In the past we have helped scientists in Sri Lanka to adopt low cost passive air quality monitoring with the help of California Air Resource Board and to learn the possibilities of privately managed air quality monitoring. Capacity building in Sri Lanka for emission inventory and modeling will be accomplished through STTA and EPSG. Improved understanding of carbon trading and building capacity of the GSL and private sector is expected to reduce the cost of development programs where reduction of green house gases will result. Last year Dr. Prabhu Dayal, President of C-Trade (EPSG) and Ms. Donna Boysen of LBI conducted scoping mission (STTA) on the potential in Sri Lanka.

- STTA to start the groundwork done to establish systematic air quality monitoring (2005).
- Identification of a number of projects (mini-hydro, solar and wind) that may have the potential to participate in carbon trading (July 2004).
- STTA to set up of monitoring and accounting systems (Government framework) to capture necessary data and to setup institutional setup (2006).

## 2. Pollution Prevention, Energy Efficiency and Clean Energy Development

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**Purpose:** To improve environment management capacity in Sri Lanka industries

**Primary Program Areas:**

IR2 Improved Urban Environmental Management, Technologies and Resource Efficiency

IR3 Improved Industrial Environmental Management, Technologies and Resource Efficiency

**In-Country Partners:** FCCISL, National Cleaner Production Center (NCPC), USAID sponsored Tourism Cluster, Hotel Industry Association, SriLankan Airlines, Industrial Services Bureau (ISB), Regional Cleaner Production Center, Central Environmental Authority (CEA), Board of Investment (BOI), National Water Supply and Drainage Board (NWSDB) and Sri Lanka Energy Managers Association

**International Partners:** TSSC and Alliance to Save Energy

**Description:** The continuation of cease fire, government's desire to reduce poverty by increasing economic development through its "Regaining Sri Lanka" and the positive approach towards reforms and market economies provides opportunities for accelerated industrial development in the country. Lack of regulatory enforcement, inadequate awareness of health impacts related to environment, and the traditional pressure to "grow now, pay later" may put Sri Lanka in a position to fall victim to the same environmental woes that have plagued most nations as they develop. Both public and private sectors need to appreciate and be informed about the benefits and methodologies and benefits of environmental protection to improve the industrial competitiveness. Among the tools to improve industrial environment may include environmental management systems, environmental cost accounting, clean technologies, stakeholder dialogues etc. US-AEP can play a pivotal role in linking partners, prioritizing and organizing activities and providing industrial expertise and technology as the work proceeds. Improved environmental standards is a must for most of the Free Trade Agreements (FTA's) Sri Lanka intend to participate that include a potential FTA with USA.

US-AEP/Sri Lanka recognizes and has begun to work on a wide variety of industrial development obstacles, such as solid waste and wastewater, and has made progress in promoting cleaner production programs. The program has also recognized the value of information dissemination, regulatory fees based on pollutants generated, the reporting of company performance, the use of associations to leverage change and other techniques. Its relationships with government and the Federation of Chambers of Commerce and Industry of Sri Lanka (FCCISL) are vital to the establishment of public-private partnerships and cooperation. There are about 2,300 industries in category of "high polluting." More than 2,000 service stations in the country are discharging untreated or improperly treated wastewater. It is well known that the present system is not sustainable, but economic, political and social pressures, as well as poor information flow and poor stakeholder participation have hindered the use of safe and environmentally sound practices.

**Activity 1: Best practices database to improve energy efficiency in hotels.**

Energy costs account for a considerable share of recurrent costs in a hotel. Studies have shown that implementation of proper energy management practices can save at least 10% to 20% of the hotel energy bill, particularly at hotels where best practices have not been implemented either at the design stage or subsequently. While some energy management opportunities are 'Hotel Specific', most of the opportunities are common to the group of hotels in the cluster and probably to the region. There are no local energy consumption norms for the Sri Lanka hotel cluster. ASE, SLEMA, Tourist Hotel Association of Sri Lanka and USAID Tourism Cluster will create an energy database for hotels to facilitate the establishment of energy consumption norms, share common energy saving opportunities, identify best practice technologies and expertise and identify energy conservation targets

- Standard formats for energy data collection (March 2004)
- Mechanism to collection of base energy data and regular flow of information (May 2004)
- Data Processing systems (May 2004)
- Energy use indices and establishment of Energy use norms (June 2004)



- Development of the energy database (June 2004)
- Mechanism to managing the database by the tourism cluster (June 2004)
- Establish private sector led energy efficiency advisory services to the hotel industry (August 2004)
- Positioning and building capacity of ESCOs to provide services (September 2004)

### **Activity 2: Best practices “Ecolodge” project**

The USAID Competitiveness Initiative, Tourist Hotels Association of Sri Lanka, Travel Agents Association of Sri Lanka, Sri Lanka Tourist Board, and SriLankan Airlines have formed a partnership to develop an industry level initiative to build a best practice ecolodge. It was unlikely that a single private sector company would invest in the expertise required to ensure this is a model ecotourism project that national universities and government agencies would be willing to cooperate. Project aims to develop and provide quality training programs for the industry on nature interpreters/guides that is currently a constraint to development of environmental tourism. Our role is to help in designing best practices in environmental management (waste, wastewater) and energy and management support to USAID Sri Lanka to implement the \$ 900,000 USAID/MIF grant related to the ecolodge development.

- Incorporation of energy efficient systems and cleaner energy technologies into the design of the ecolodge (2005)
- Incorporation of environmentally friendly best management practices to the design (2004)
- Design and implementation of educational programs on best practices and technologies (2005)

### **Activity 3: Promotion of Cleaner Production**

We have been helping NCP staff to obtain global exposure and helped in training a number of cleaner production auditors. Promotion of Cleaner Production will eventually help Sri Lanka industries to obtain ISO14000 and other environmental certifications. In FY2004 US-AEP was invited to sponsor the National Cleaner Production Award to industries and we will work with NCP and TSSC to facilitate the event. In addition we will look in to the possibility of supporting NCP to link up with two entities that can provide cleaner production related assistance to industries, namely, the ADB sponsored Regional Cleaner Production Center located in Avissawella and Industrial Services Bureau (ISB) of North Western Province. ISB is fully equipped and financially stable but the Regional Center is in need of assistance.

- Creation of an Environment Management Systems (EMS) user association facilitated by NCP and ISB(2005)
- Support the concept of Regional Cleaner Production Centers (2004)

### **Activity 4: Prevention of industrial contamination of water resources**

Increased industrial growth has threatened a number of water bodies including the Kelani River that supply drinking water to the Greater Colombo Metropolitan Area. Information of the extent of contamination and the pathways of pollution is not available. During the past the World Bank Environmental Action 1 Plan project introduced the concept of “Polluter Pays” to Sri Lanka. However for effective implementation and enforcement of policies needs data and improved capacity at CEA. Board of Investment and CEA last year requested US-AEP Sri Lanka assistance to start work in developing a framework for the Kelani River basin, the mostly industrialized river basin and the watershed that provides drinking water to Greater Colombo. Our intervention this year is primarily to better understand the system and provide a framework, based on the USEPA approaches such as Storage and Retrieval (STORET) database. Activity Elements include short term technical assistance to device a model monitoring system for selected locations.

- Model monitoring system design (June 2004)
- Knowledge on the status of water quality monitoring and water quality status (Sep. 2004)
- Roadmap to adopt systematic monitoring of water bodies and database development (2005)

### **Activity 5: Use of US Experience and Technologies for Pollution Prevention**

Trade shows and study tours allow Sri Lankan businessmen, planners and policy makers to identify appropriate technologies and to talk directly to technology providers or experts about their specific

needs. We plan to participate in selected tradeshows that include Water Environment Federation WEFTEC 2003, Los Angeles, CA in October 2003 (four Sri Lanka delegates). WEFTEC focus would be to identify water treatment equipment and water purification systems such as Reverse Osmosis and using improved aeration methods and biological treatments in water purification and to ensure water quality in lagoons. Based on the WEFTEC 2003 results, US-AEP recommend one CSG grant on waste oil separation/processing and will work on another to introduce aeration of surface water bodies using diffusers. Also US-AEP offices in Sri Lanka and India collaborated on one water treatment related CSG grant last year which will be implemented this year. We will also plan to participate (about 5 delegates each) in WasteExpo, 2004 and AWMA 2004. In addition we will help Sri Lanka institutions and US companies to travel to facilitate technology transfers.

- Recommendations to handle waste oil in hotels and service stations through CSG grant to FL (July 2004).
- Improved wastewater treatment methods in industrial zones through SL and India joint CSG grant to CA (July 2004).
- Improved aeration using diffusers via a CSG grant to be awarded (Results of field trials are expected in August 2004).
- More technologies and best practices identified during upcoming visits (2005)

#### **Activity 6: Pilot testing of renewable energy systems**

A CSG grant was approved for the South West Wind Power to setup two pilot projects, one in a remote fishing village where power and water problems were noted and powering of telecommunicating systems that are off grid and ISB will be the local counterpart to SWWP. A second CSG grant was recommended for a community water pumping system (Solar Pedaflow) that uses solar power and manual labor to pump groundwater. LGA Associates and Rajabdeen Brothers are the Sri Lanka partners for the latter project.

- Pilot project to evaluate economics of the use of wind and solar systems for off grid applications (May 2004)
- Pilot project to evaluate social acceptability and economics of using solar power in water pumping (June 2004)

#### **Activity 7: Evaluation of clean energy and waste to energy applications**

There are a number of energy related technologies Sri Lankans have identified during the last two years including the use of waste and biological material such as plant materials, saw dust, brewery waste, portions of municipal solid waste etc. Technologies US-AEP identified as potential winners are Gassifiers (Community Power Corporation, Colorado), Anaerobic digesters (Lasans Group), microturbines (Capstone) etc. We will work towards establishing several pilot sites using individual or combinations of identified technologies. Potential applications of energy generated include water purification using reverse osmosis, drying of coir, water pumping, etc. etc. This is a new area for US-AEP Sri Lanka and the effort will support the Government strategy to generate energy using biomass.

- Data generation and feasibility of new applications (2005)
- Use of renewable resources and potential reduction in fuel oil use (2005).

### 3. Improved Urban Service Delivery

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**Purpose:** To create enabling environment for efficient urban service delivery in Local Authorities

**Primary Program Areas:**

IR3 Improved Industrial Environmental Management, Technologies and Resource Efficiency

**In-Country Partners:** Ministry of Local Government, City of Colombo, City of Sri Jayawardenapura, Kotte, National Physical Planning Department, Cities and Association of Mayors and Arthacharya Foundation, Sethsevana Foundation, Burns Environmental Technologies (Pvt.) Ltd.

**International Partners:** International City Mangers Association and Alliance to Save Energy

**Description:** As Sri Lankans move beyond the era of conflict that has challenged the country for the last two decades and strategies to revive the county's economy, local government units will become legitimate partners in the overall governing of the country. Urban service delivery plays a major role to keep pace with the anticipated rapid growth and could be benefited much by adopting improved management practices and use of modern tools on decision support systems using Geographic Information Systems (GIS) and Global Positioning Systems (GPS). Innovative public-private partnerships, enhanced knowledge of financial mechanisms and technology interventions to improve service delivery also can play a positive role.

During the last two years we helped the City of Colombo and Private Sector to adopt a new legal framework to collect and process MSW (900 tons/day) through a public-private partnership. At present a private company, Burns Environmental Technologies (BETL) receives and makes compost using the City of Colombo waste. Ensuring the marketability of MSW based compost is vital for the sustainability of the project. Mr. Tom Halbach, Professor, University of Minnesota and Minnesota Extension Service worked with BETL to improve the process and instrumentation and also helped to draft Sri Lanka Standards for Composting by working with the Sri Lanka Standards Institution and National Fertilizer Secretariat. On a small scale we found that the system introduced by the NGO "Arthacharya Foundation" has been extremely effective to reduce the waste into the municipal disposal stream. This model includes a community based micro-financing scheme to improve income level, nutrition and health status of families and information transfer process on health etc. Last year we strengthened the Arthacharaya foundation project by helping to establish a plastic palletizing facility in the city of Gall via a TAF NGO grant. US-AEP intends to help replicate this experience in other urban environments.

Last year through the Alliance to Save Energy project on energy efficiency in the City of Colombo, we have identified several policy and technology interventions to improve street lighting and water pumping system in the city. There is a need for a clear street lighting policy and a strategic plan for its implementation. Such a policy should include design standards, operation and maintenance mechanisms, monitoring, control and updating mechanisms, financing mechanism, etc. We will be continuing this project into FY 2004 with the help of USAID/EGAT. City of Colombo is providing funds for most of the street lighting improvements as an investment.

#### **Activity 1: Large Scale Municipal Solid Waste Management**

In FY04, US-AEP will work with the City of Colombo MSW project and to ensure the quality of the compost made are of uniform standard quality through capacity building and an equipment grant. Our assistance will help BETL to increase the testing during the process and in final products to optimize the compost manufacturing process for quality and cost. We will encourage BETL and other private sector companies to participate in MSW disposal projects.

- Standards for MSW made compost through the National Fertilizer Secretariat and Sri Lanka Standard Institution (February 2004).
- Facility dedicated to test the quality of compost (March 2004).
- Increased awareness on the advantages of using quality compost in tea plantations and vegetable cultivation as a soil amendment to ensure the sustainability MSW based compost projects (continuing).

## **Activity 2: Community Based Municipal Solid Waste Management**

US-AEP We will work with a consortium of NGO's to improve the knowledge among urban poor to identify glass, paper and to sort plastic varieties (low density, high density and polypropylene etc.). A public – private alliance will be developed to help collection, processing and transport of sorted waste and products to markets. Major value additions will include pelletizing the sorted plastics, compost and waste to energy. NGO's from 16 communities around the country will be trained on aspects of waste management and creating marketable products. Implementation partners will include NGO's such as Arthacharya Foundation and Sethsewana. As a part of the program we will facilitate an exposure tour to India on mobilization of communities in waste collection and processing. Also this project could serve as an extension to the SCOTIA – MIF grant for coastal hotels.

- Propagation of the concept waste is money, material development and training (May 2004).
- Establishment of programs to sort plastics, compost and to make more money for urban poor through waste management (July 2004).
- Optimization and providing structure to small to medium scale plastic recycling using waste (August 2004).
- Public – Private alliance for recycling (August 2004).

## **Activity 3: Strengthening Municipal Services**

In May 2003, ICMA program manager Jon Bomet visited Sri Lanka to discuss ICMA's "Making Cities Work" program and its new evolution "City Links." Subsequently US-AEP facilitated a visit of representatives of the Ministry of Local Government and the capital city Sri Jayawardenepura Kotte to ICMA annual conference in September, 2003. Jon visited Kotte in October 2003 with the objective to develop an action plan for Kotte using ICMA tools. In FY2004 US-AEP further facilitate ICMA and Sri Jayawardenepura Kotte activities.

- Roadmap to improve service delivery at Sri Jayawardenepura
- Improved financial management and planning skills in the City.
- Introduction of new techniques such as Geographic Information Systems (GIS) in planning, revenue collection and progress control of projects.

## **Activity 4: Improved Policy Framework for Energy Efficiency in Street Lighting and Water Pumping**

The design requirements for an efficient and effective street lighting system, such as energy and light efficiency, lighting distribution and levels have not been considered in installing street lights. The system further deteriorates with poor maintenance and waste of energy due to inefficient operating practices. Presently most local authorities are not concerned about energy consumption or energy efficiency as the bill is paid by the central Government. With the planned unbundling of Ceylon Electricity Board (CEB) scheduled for December 2003, street lighting would purely be a commercial arrangement between the Distribution Companies, Cities and the Government of Sri Lanka. These changes will prompt cities to start working on energy efficiency and will allow private sector to help in energy services. Following up with last year's energy audit study the ASE and SLEMA team will design Standards by classification of areas, cities, rural areas, and develop a classification system for roads based on international standards with local requirements. Based on the developed classification, the design requirements such as lighting levels, distribution, energy efficiency, will be defined. The monitoring responsibility of implementation of standards and updating standards will be defined.

A model program will be designed for the City of Colombo (using district number 4) to demonstrate the developed standards including creating a database for identification and numbering, maintenance records of street lighting system and best practices including contracting work and costs. Data base will be based on a GIS based maps of the streets for easy monitoring and management. Technology and management interventions include replacing lamps with low energy consuming lamps; planning of bulb replacement after their effective lifetime; scheduling of cleaning and maintenance of the lamps/way leaves; routine measurement of lighting levels of key roadways and take corrective action if necessary

During the last year's energy audit on water pumping at the Ambatale Water Pumping Station that supply drinking water to the city of Colombo, it was found that the specific energy consumption of the treatment plant varies between 0.32 to 0.42 kWh/m<sup>3</sup>. The main reason for this high variation was observed to be the poor clarification, particularly during high turbid periods. By enhancing the chemical treatment to improve the clarification more than 25% of energy saving can be anticipated. The increased throughput of treated water will be an added advantage. During this year, as a demonstration, SLEMA and ASE team will monitor the treatment process before and after chemical treatment; establish and verification norms; introduce proper metering devices for water pumping; account chemicals for trial runs to verify the energy savings and develop guidelines for the Water Board. The estimated funding requirement for the above exercise is approximately LKR Two Million and the cost will be borne by the NWSDB. Results of this work can be replicated in many such occasions.

- Improved classification system for street lighting (March 2004)
- Guidelines for implementation of standards (March 2004)
- Demonstrated money savings by adopting energy efficiency (June 2004).
- Collection of energy efficiency best practices that can be accessed easily to city managers and planners and workshops in four regional locations (September 2004)

## 4. Increased Environmental Awareness and Citizen Participation

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**Purpose:** To engage citizens in environmental dialogue through improved understanding

**Primary Program Areas:**

IR1: Improved Environmental Governance

**In-Country Partners:** Wayamba Integration for Growth and Sustainability (WINGS), Industrial Services Bureau (ISB), Environment Foundation Ltd, Margamituro and Arthacharya Foundation

**International Partners:** The Asia Foundation (TAF), Institute of International Education (IIE), GLOBE project, WB/GEF

**Description:** Increasing public awareness on the relationships between pollution and health and involving policy makers and citizens on the environmental dialogue is one of US-AEP program strategies to improve environmental governance in Sri Lanka. Target groups include, school children, public policy makers and enforcement officers. In the long-term improved awareness about the status of the environment, processes and conditions affecting the environment due to human interventions, relationships between human health and pollution will help ensure the sustainability of the urban and industrial growth and for the health of the citizens. Through the Asia Foundation, US-AEP operates a NGO grant mechanism to involve citizens in the environmental dialogue. Four NGO grants have been issued so far that include NGO Margamuthuro, (Friends on the Road) to increase the awareness on the importance of vehicle maintenance and driving habits, Citizen Led Environmental Awareness Network (CLEAN) to measure and talk about the temporal changes of air, water and noise pollution in four major cities, Environmental Law Foundation to develop a joint action plan and community monitoring plan for Horana Industrial Park and Bellanwila Sanctuary and Arthacharya Foundation to develop a integrated recycling system for solid waste management and an educational campaign in the City of Galle. US-AEP and the Embassy three years ago introduced an internet-based, interactive environmental education for secondary students, named, Global Learning and Observing for the Benefit of the Environment (GLOBE) developed by the National Oceanographic and Aeronautic Administration (NOAA). To date more than 30 teachers have been trained and are implementing the program and making a slow progress. In FY2004 US-AEP will focus more on engaging public in environmental awareness and strength partnerships between communities and urban and industrial managers. US-AEP will also make an effort to integrate elements between the projects that we sponsor and to share/mobilize resources in between projects.

CLEAN project will measure air quality, water quality and noise in four cities, namely, Colombo, Kandy, Kurunegala and Nuwara Eliya. Results of the measurements and their implication on quality of life will be discussed with school children, politicians and the public to improve the understanding of anthropogenic effects and to improve environmental enforcement.

- Mechanisms and opportunities to engage public in environmental dialogue (March 2004).
- Public-private partnerships to disseminate information collected (April 2004).
- Establishment of resource centers in the selected four cities, material development on health and pollution related information and dissemination (May 2004).
- NGO grant to Margamituro will implement a vehicle maintenance program and a public awareness campaign to three wheeler drivers and motorists in association with Traffic Police.
- Guide book for drivers and vehicle owners on best practices and vehicle parts needed attention and number of awareness campaigns to complement US-AEP sponsored air quality improvement programs (June 2004)

Environment Law Foundation led Sustainable Development through Partnership project (on industrial park and the sanctuary) is expected to progress during the year and bare results.

- Model program for community monitoring of environmental impacts (July 2004)

Activities related to the GLOBE program will expand faster with World Bank funding being used to procure computers to schools. In FY04 we will continue our support to the GLOBE program as and

when necessary. US-AEP will link the results of the CLEAN project to GLOBE program. CLEAN project will convert selected US developed material to suit Sri Lanka audiences.

- New approach to environment education introduced (May 2004)
- Use of international data and material to expand knowledge (August 2004)
- Taking environmental dialogue to households through students (All year)