USAID
FROM THE AMERICAN PEOPLE

ENERGY UPDATE

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Powering Economic and Social Development through Expanded Access to Modern Energy Services

Energy Update is published bimonthly by the Energy Team, Office of Energy and Information Technology, Bureau for Economic Growth, Agriculture and Trade. The Energy Team focuses on increasing access to environmentally sound energy services by:

- Improving policy, legal, and regulatory frameworks to establish necessary market conditions for the private sector delivery of energy services and environmental management services;
- Increasing institutional (public, private, and NGO) ability to provide or deliver energy and environmental management services in the new and enhanced markets; and
- Increasing public understanding of, and participation in, decisions regarding delivery of energy and environmental management services.

Gordon W. Weynand, Director, Energy Programs, Office of Energy and Information Technology

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COMING NEXT ISSUE

"Transparency, Governance, Resource Flows," featuring various aspects of hydrocarbon resource news, from the impact of rising oil prices to new initiatives in revenue transparency.

Update the USAID community on your projects on thus topic by submitting a draft manuscript of up to 500 words by June 21 to the Editor Davida Wood (dwood@usaid.gov).

Articles are accepted for publication from employees of USAID, associated organizations, and contractors.

FROM THE EDITOR

This issue of Energy Update highlights USAID efforts worldwide in energy efficiency and air quality. We estimate that nearly 40 missions support projects in these areas.

Our Special Report on Air Quality focuses on USAID initiatives to mitigate the impacts of air pollution from energy use in vehicles and households. According to the World Health Organization, only 15% of the largest cities in developing countries have acceptable air quality, and an estimated 2 million people die annually from illnesses linked to pollution caused by household cooking and heating practices.

Articles from USAID Missions in Mexico, Nepal and the Philippines focus on the link between vehicles and air quality, and introduce alternative methods for reducing emissions. In Sub-Saharan Africa, USAID is assisting three countries (Ghana, South Africa, and Tanzania) to develop the capacity to establish their own air quality management programs. And indoor air pollution problems are now being tackled by a joint EGAT-Global Health initiative that launched its first two pilots in April in Bangladesh and Peru.

Energy efficiency initiatives help improve air quality, too, by reducing energy consumption. Such conservation programs also benefit by reducing a country's dependence on fossil fuels, easing infrastructure bottlenecks, conserving natural resources and improving industrial and commercial competitiveness through reduction of operating costs. We highlight a few of USAID's most successful energy efficiency programs: USAID/India's ECO project, the Europe & Eurasia Bureau's municipal energy efficiency financing programs, and the Energy Team's Watergy program.

Within the Energy Team, efficiency and air quality issues are managed by the Urban Energy Program, which provides developing countries and missions policy guidance, management tools, technologies, information and other needed resources aimed at changing old behaviors and influencing new investments.

This assistance is particularly important because two-thirds of the world's population is expected to live in urban areas by 2025. In the developing world, urban populations are growing at about 3.5% annually. Such growth has put additional pressure on already strained infrastructure, institutions and natural resources.

Another focus area of the Urban Energy Program is to increase access of the urban/peri-urban poor to sustainable sources of energy. A recent report, "Innovative Approaches to Slum Electrification," discusses the issue and is guiding development of this new project area. The Urban Energy Program staff welcomes your suggestions on slum electrification projects, as well as comments, ideas and suggestions in the areas of energy efficiency, air quality and household energy. Your contacts are:

- Jas Singh, program manager (jsingh@usaid.gov), a specialist in energy efficiency and financing, who joined USAID after nine years at the World Bank's East Asia Energy and Mining Unit;
- Simone Lawaetz (slawaetz@usaid.gov), an energy and environmental specialist with expertise in areas of slum/peri-urban energy issues and private-sector development, who also brings World Bank experience to USAID;
- Pamela Baldinger (pbaldinger@usaid.gov), an expert in air quality and household energy issues, who has diversified experience as a consultant for the World Bank and USEPA and as the senior manager for a US trade association in Beijing.

Davida Wood
Editor
Energy Update

Special Report: Air Quality

The following three articles highlight USAID initiatives to mitigate the impacts of ambient- and indoor-air pollution caused by rising vehicle usage and domestic fuel consumption in developing countries. Early results are impressive.

Cleaning Up Diesel Emissions in Mexico City

On most days in Mexico City, residents cannot see the mountains surrounding the city. Air pollution adversely affects the health and quality of life for all residents, with ground-level ozone and particulate matter exceeding national standards 80% of the year. Heavy-duty diesel buses and trucks, which account for only 5.5% vehicles, contribute a whopping 38% of the nitrogen oxides and over 50% of the fine particulates. These pollutants pose serious public health concerns, ranging from asthma to cardiovascular disease to cancer.

USAID and USEPA initiated the Mexico City Diesel Retrofit Project in June 2004 to demonstrate how the combined use of low-sulfur fuels and diesel retrofit technologies can improve air quality. The project is similar to programs now underway in several US cities—including Seattle, New York and Washington, DC. The Mexico City Diesel Retrofit Project is America's first international program of this type and is already serving as a model for USEPA projects in other areas of the world.

The project is being implemented by the Center for Sustainable Transport, a Mexico City-based NGO, which won grants totaling $511,000 from USEPA/USAID and EMBARQ, the World Resource Institute's Center for Transport and the Environment. Two US firms, Johnson Matthey Technology and Fleetguard Nelson, developed the retrofit emissions control systems, which are installed in mufflers. One of the project's objectives is to compile information on costs and emissions reductions critical for policy-making and expansion of the program to other fleets in Mexico.

Heavy-duty diesel-powered vehicles, which contribute a disproportionate share of the fine particulates and nitrogen oxides in Mexico City's air, are the targets of a cleanup program that could improve public health. A trial retrofit program fitting particulate filters and/or oxidation catalysts in the mufflers of city buses, coupled with the use of low-sulfur diesel fuel, has dramatically reduced emissions—by as much as 90% in some vehicles.

The retrofit demonstration program involves buses owned by the Mexico City Transit Authority (Red de Transporte de Pasajeros). Ultra-low-sulfur (15 parts per million, ppm) diesel fuel is being provided from a US refinery and shipped to Mexico City. RTP buses selected for the demonstration have been modified and are now in service.

Tests by Centro de Transporte Sustentable show reductions of up to 90% in the particulate emissions from the newer vehicles using diesel particulate filters and ultra-low-sulfur fuel, and reductions of 10-23% in particulates from the older vehicles using diesel oxidation catalysts. As more than 3000 buses ply the streets of Mexico City, the potential for significant pollution reduction is great.

The retrofitted buses will operate for one year with the new emissions controls and the lower sulfur fuel, and then will be retested. Project partners currently are formulating next steps, including how to publicize results, lessons learned, etc.

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Nepal Pioneers Use of Electric Vehicles

Electric Vehicles (EVs) offer considerable promise for cleaning up the air in Kathmandu. A public-private partnership supported by USAID/Nepal has helped address the policy and financial barriers challenging widespread adoption of the technology. Now over 100,000 people use EVs daily for public transportation.

USAID/Nepal's pioneering efforts to introduce electric vehicles to Kathmandu have produced numerous successes: new private-sector businesses have been created, more than 2 million litres of petrol/diesel per year has been saved, and emissions of greenhouse gases have been reduced by nearly 12,000 tons annually for the past several years. However, inconsistent government policies and other problems threaten to undermine the early success of the new vehicles.

In the early 1990s, USAID/Nepal concluded that electric vehicles (EV) offered one possible solution to Kathmandu's serious air pollution problem, and provided the funding for the manufacture of several 10-passenger, three-wheeled, battery-powered EVs, called "Safa Tempos" ("safa" meaning clean, "tempo" a generic term for three-wheeler).

To promote the Safa Tempos, USAID has been supporting a program called the Kathmandu Electric Vehicle Alliance (KEVA). This public-private partnership, supported under a GDA since 2002, has four US partners: PADCO, Winrock International, City and County of San Francisco, and Electric Drive Transportation Association (EDTA).

There are 600 Safa Tempos produced by five manufacturers now operating in Kathmandu. Over 100,000 people use them daily for public transportation. This progress is attributable in part to KEVA's success in convincing policymakers to lift registration restrictions on EVs and to lower customs duties and taxes applied to EV components (30% less than for other vehicles). Such actions have helped EVs gain a competitive foothold.

EVs not only reduce air pollution, but can also help reduce fuel imports since some Safa Tempos can charge their batteries with electricity generated from Nepal's own hydropower resources. Moreover, the vehicles have provided new opportunities for manufacturers, battery providers, and drivers. About 15% of the Safa Tempos are driven by women specially trained for this purpose.

However, inefficient industry structure and other problems have taken their toll, and only one local company is still making Safa Tempos. The biggest challenge for the EV industry in Nepal is competition from diesel micro-buses. Subsidized diesel vehicles are more profitable to operate than the EVs, because of their larger passenger capacities.

KEVA has responded to the competitive challenge with innovative ideas to improve the economics of EV operations—such as daily

battery leasing schemes that allow the EV owners to make daily payments over the lifetime of the batteries, rather than paying a large sum upfront. Previously, the large investment for the batteries (more than 30% of the vehicle cost, paid on top of the latter), proved a considerable obstacle for many potential owners. With leasing, the battery cost becomes an operating cost rather than a capital investment.

KEVA also is encouraging Safa Tempo operators to charge batteries at off-peak hours, when the electricity costs less. These business strategies, combined with rising global petroleum prices and continuous improvements in EV technology and operations, should make EVs more competitive in the future.

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Developing Sustainable Air Management Programs in Sub-Saharan Africa

Air quality is a growing problem in Sub-Saharan Africa because of rapid urbanization, but little data exists to gauge the severity of the pollution and its impact on the population. USAID, in partnership with USEPA and the UN, is implementing monitoring programs in Ghana and Tanzania that can be replicated in other countries. Initial results will be presented at in-country workshops in September.

Air pollution in sub-Saharan African cities is growing due to increasing rates of urbanization - *the highest of any region in the world* - resulting in rising vehicle usage and domestic fuel use in cities. In addition, industrial air pollutants are, for the most part, unregulated and often in close proximity to urban residential areas. All urban dwellers are impacted by the growing pollution problem, but the poor—especially children—are particularly affected. Reasons include the large amount of time spent working near major roads, greater reliance on open burning for cooking and heating, and the close proximity of low-cost residences to sources of pollution. The severity and nature of the air pollution problem are not well known, however, because air-quality data are not readily available.

To gather the information officials need to develop and implement programs that protect air quality, USAID/South Africa and the EGAT Urban Energy Program are funding monitoring and training programs in three countries—an effort with good potential for replication elsewhere in Africa. USEPA is developing the programs and is working with its national counterparts in South Africa, Ghana and Tanzania to implement the projects.

The air monitoring program focuses on Accra, Ghana, and Dar es Salaam, Tanzania, in part because of their efforts to pass preliminary air management regulations and their desire to develop detailed air quality standards. Each project is being implemented through an in-country Stakeholder Committee, with representatives from government, academia, NGOs and industry. The stakeholders are participating to help ensure that each city's monitoring program will be sustained long-term. Although the focus of each project is to monitor ambient air quality, short-term indoor air monitoring—with an emphasis on cookstove air contaminants—also will be conducted.

To date, USEPA and its contractor, RTI, have assembled, calibrated and shipped the necessary equipment to establish six ambient-air-quality monitoring stations in each city. Technicians in both countries have received classroom and hands-on training and have already started using their new equipment. Initial results will be unveiled at workshops in September.

The program in South Africa aims to help the Department of Environment and Tourism (DEAT) implement the Air Quality Management Act of 2004 (AQMA), signed into law last February. The

AQMA represents a paradigm shift in the approach to air- quality management in South Africa. Its goal is to guarantee a provision of the Constitution that states everyone has a right to an environment that is "not harmful to his or her health or well-being." AQMA covers a much broader range of air-quality management programs than ever before, from ambient air standards to climate change to enforcement issues, and lays out broad roles and responsibilities for the different government entities involved.

Following consultation with in-country stakeholders, USEPA initiated the development of train-the-trainer courses in General Air Quality Management and Air Emissions Inventories. Deliverables include instructor and student manuals and resource CDs. These will allow conduct of the courses after USAID/USEPA support ends. Completion of course materials is scheduled for early fall. Follow-on work includes modification of the training program for broader international use.

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Notes From The Field

Watergy Program Pioneers Performance Contract to Save Water, Energy in S. Africa

With support from EGAT's Energy Team, the Alliance to Save Energy (ASE)'s 'Watergy' Program has resulted in the first-ever energy performance contract (see sidebar) for the management of water network pressures in the municipal area of Emfuleni in South Africa. The total project cost is about R11 million (about $1.83m) and the ESCO consortium (WRP Consulting Engineers and DMM Environmental Consultants) are assuming full financing risks under a 'shared savings' energy performance contract. The project will reduce water consumption by 7 billion liters and energy use by over 14 million kWh every year. This corresponds to direct annual financial savings of R25m ($4.1 m) to the municipality and improved air quality.

Over the past five years, USAID has been supporting the Alliance to Save Energy in an effort to promote water and energy efficiency in water utilities worldwide. This program, referred to as the 'Watergy' program, is currently operating in six countries (Brazil, Mexico, India, Philippines, South Africa, Sri Lanka). The Watergy program in South Africa has been under implementation for about two years and has actively participated in this project over the last 15 months and played various roles in bringing this project to fruition. These roles include participation in conceptualization, contracting arrangements, project management and,once completed, the technical verification of savings achieved.

How Energy Performance Contracts Work

A performance contract is used where a service provider agrees to receive payments based on actual project results. For example, a service company (or ESCO), would make an investment in energy-efficiency upgrades within a customer's facility and receive payments based on the actual, verified energy savings. This way the customer does not have to make any upfront investments, maintains a positive cash flow throughout the project and does not bear any of the technical risks. There are many ways to design performance contracts; the key is that they fit well within the local context.

This innovative project is the first time that the practice of performance contracting has been applied to the installation, operation and management of pressures in water networks for the purpose of reducing waste. The contract is a form of BOOT (Build-Own-Operate-Transfer), which typically is applied only to large capital-intensive concession projects for the provision of infrastructure, rather than to operations seeking to attain efficiencies. Under this contract, the ESCO will be required to finance, design, install, operate and maintain the facility for a period of five years. During this time it will be remunerated based on resulting savings in supply of water to the area of Sebokeng/Evaton. The ESCO will be entitled to 20% of the water savings, with fees determined monthly; the Alliance will independently assess and verify the savings. At the end of the contract the infrastructure, which is designed to operate for at least 20 years, will be handed over to the municipality at no cost.

The infrastructure to be installed is aimed at reducing the high night flows currently experienced in the Sebokeng/Evaton supply area. These high night flows are indicative of many leaks, both on private properties and within the

water network, and represent a financial loss to the city because of poor payment levels. By reducing supply pressures during off-peak periods and especially at night – thereby not affecting the quality of service provided to the consumer – the levels of leakage will be substantially reduced.

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Cooking Cleaner in Bangladesh and Peru

A new USAID partnership takes aim at indoor air pollution, which contributes to the deaths of nearly 2 million women and children every year.

The Energy Team and the Global Health Bureau are collaborating to promote the adoption of improved household cooking devices, fuels and behaviors with the goals of reducing indoor air pollution (IAP) and improving health. The program, implemented by Winrock International, launched its first two pilots—in Peru and Bangladesh—in April. The programs will directly benefit 1,100 households while laying the groundwork for scalable and sustainable models to address the growing problem of IAP in the developing world.

Over 2.5 billion people, mostly poor in the developing countries, depend on biomass sources to meet their household energy requirements. Burning of biomass in poorly ventilated kitchens creates high concentrations of carbon monoxide, particulate matter and other pollutants. Women and children are most vulnerable to exposure from IAP, which reportedly causes about 1.6 million deaths annually.

The potential health benefits of improved cookstoves have been neglected by previous donor and government programs, which traditionally focused on fuel efficiency gains (as a means to conserve forest resources). Overemphasis on technology, without concurrent work on behavioral change, market access and health impacts, resulted in limited results and unsustainability of many projects. The Winrock program is designed to consider all of these factors and create integrated models that will produce sustainable impacts.

In Bangladesh, Winrock is working with two strong local partners--Concern Bangladesh and Village Education Resource Center--that currently operate separately to develop an integrated energy and health intervention. Winrock will also work with local financial institutions to implement a micro-financing mechanism to improve access by poor households to improved technologies. The advisory committee includes key government and donor agencies, which should assist with scale-up after the pilot ends in September 2006.

The pilot project for Peru will replicate and scale-up a successful World Health Organization intervention implemented in the Andean district of Inkawasi. The goal is to demonstrate a model for incorporating IAP mitigation into a portfolio of environmental health initiatives for poor communities. Another objective is to train local micro-entrepreneurs—including stove builders and ceramic artisans, many of whom are women.

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Promoting Energy Efficiency in India

USAID/India's Energy Conservation and Commercialization (ECO) Project results include progress in market development, policymaking, financial incentives, risk-mitigation mechanisms and management training. Phase II, now underway, includes support for a robust demand side management program, a large-scale efficient lighting demonstration and assistance to Indian states in developing energy conservation action plans.

USAID/India designed the Energy Conservation and Commercialization (ECO) project to overcome the market, technical, economic, financial, regulatory, policy and institutional barriers that have inhibited investments in end-use energy efficiency practices and technologies in India. The project was arranged in two phases.

Phase I, now complete, supported the development of policy and market interventions to enhance the capabilities of the private, financial, and government sectors for deploying market-based mechanisms for end-use efficiency investments. Highlights include:

- Market. Development of model measurement and verification protocols and performance contracts to help structure projects for ESCOs. Launch of an Energy Efficiency Business Exchange to help incubate new businesses and projects.

- Policy. Assistance to develop India's Energy Conservation Act of 2001, establish the Bureau of Energy Efficiency, and develop certification plans for energy conservation professionals.

- Financing. Establishment of guidelines for energy conservation loans. Soft loans made to enable a cogeneration project and a distribution system upgrade.

- Training. Organized over 2500 person-days of training for executives of utilities, regulatory agencies, financial institutions, end users, and others.

Phase II, recently launched, supports utility demand-side management (DSM) and the development of energy conservation plans in the states of Karnataka and Maharashtra. Also included is the development of codes for energy-efficient buildings and equipment, as well as methods for calculating building energy consumption. Highlights to date include:

- Action plan. The Energy Conservation Act of 2001 requires every state to designate an agency to develop and implement a state-wide action plan. The ECO program assisted Maharashtra to become one of the first states to achieve that goal.

- Efficient lighting. ECO is partnering with the Bangalore Electricity Supply Co. and other stakeholders in India's first large-scale efficient lighting demonstration project. It targets 1.6 million residential customers through innovative direct-sale and monthly installment schemes for the purchase of energy-efficient lights.

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Improving Air Quality in the Philippines

Baguio City has the unenviable reputation of being one of the most polluted cities in the Philippines. Alternative fuels and membership in the Clean Cities International program are being explored as options for solving air quality problems.

In 2002, the World Bank noted that Baguio City had poorer air quality than most cities in the Philippines, including Metro Manila, Cebu and Davao. Although smallest among the four most highly urbanized centers, Baguio recorded a volume of fine particle emissions of 75.2, compared to 65.8 in Metro Manila. In addition, diseases arising from the poor air quality have risen in proportion to the reported worsening problem in air pollution. In 2001, there were 311 confirmed reported cases of bronchitis, 49 of which resulted in death. The city's financial losses resulting from health costs also soared to P480 million, which approximates its annual budget of P600 million. This is a disturbing figure considering that Baguio's population is only between 300,000 to 500,000 compared to Metro Manila (10.04 million).

To address this growing problem, Baguio requested USAID support to participate in USDOE's Clean Cities Program, which seeks to support local decisions to adopt practices that contribute to a reduction in petroleum use. This program, which is being implemented in conjunction with the Philippine Department of Energy's Sustainable Energy Development Program (SEDP), would support the government's alternative fuels program, which embraces clean alternative fuels such as compressed natural gas (CNG), biodiesel and fuel ethanol.

City residents were eager to take part in the concerted move to change the image of Baguio. Information, education and communication activities centering on alternative fuels technology were widely disseminated. However, the issue of supply and demand had to be dealt with. Even as residents became more aware and willing to try out alternative fuels, such as coco biodiesel or coco methyl ester (CME), issues of availability remained. Even government agencies, which are required by a Presidential memorandum to use CME, cited difficulties in acquiring a continuous supply for their fleets.

A series of meetings were thus initiated to engage the public and stakeholders on these issues. Nearly 175 people representing all concerned sectors witnessed the program launch and 68 members from the public and private sector signed up to join the committees formed: Training/Marketing, Technical, Infrastructure, and Monitoring Committees. Subsequently, two additional committees were created: Finance and Media. SEDP brought in experts from the U.S. to give an update on the alternative fuels industry in the U.S. and other countries and assist the stakeholders in their move to formalize the Clean Cities coalition. The experts shared their experience in coalition-building and creating markets for alternative fuel in the US and India.

It was also decided that the coalition has to be self-sustaining. Thus the need for a committee that would look for ways to fund the coalition's activities needed to be established. At the same time, the media practitioners sought membership in the coalition as a way of proving that they are concerned, not only about rebuilding Baguio's image, but also in making that image a reality. On April 11, 2005, SEDP conducted an Advocates' Orientation for the members of the executive committee and key members of all the committees. This is aimed at creating a core group of credible advocates of alternative fuels that will help SEDP and the coalition achieve their goal of making Baguio City a member of the Clean Cities International before September 2006. Looking ahead, it will be important to keep the momentum from the coalition launch at its optimum level to ensure the success of the coalition's efforts to help along the fledgling alternative fuel industry in the city and make cleaner air a reality in Baguio City.

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Energy Efficiency Financing in the Europe & Eurasia Region

USAID's Europe and Eurasia (E&E) Bureau has extended the successful lending facility for municipal energy efficiency projects with United Bulgaria Bank (UBB) under USAID's Development Credit Authority (DCA) program. The E&E-funded facility will provide for up to US $10 million in loans to be issued by UBB, with partial guarantees provided by DCA. The projects will enable municipalities to lower energy costs, improve the quality of services delivered, and reduce harmful emissions. The DCA partial loan guarantees leverage $40 in commercial loans for each dollar of cost to USAID for providing the guarantee. Additional technical assistance provided through USAID funding will work with municipalities to identify projects and prepare loan application materials. To date, under the extension, two projects have been approved for financing by UBB, and seven potential projects are being prepared.

Building on Earlier Success. The new facility builds on and expands an earlier DCA facility, funded by the Bulgaria Mission that provided loans to municipalities. Under the earlier facility, UBB provided loans to municipalities and industries for 33 energy efficiency projects. Through December 2003, the facility provided over US $9.6 million in loans for projects totaling over US $11.5 million. The projects have resulted in annual savings of 400 GWh electricity; 1.419 TJ fuel and thermal; and 530,000 tons CO2.

Why Does Municipal Energy Efficiency Matter? The DCA facility will enable municipals to make improvements to facilities providing important social services, such as schools, hospitals, street lighting, and district heating distribution systems. By cutting energy costs 20-40%, scarce municipal funds can be used to improve the quality of service delivered by these institutions, such as buying more school books or medicine. There is also evidence of important indirect benefits, including increased school attendance and lower hospital re-infection rates.

Energy Efficiency DCA Elsewhere in the E&E Region. The new Bulgaria facility is the first component of a regionally funded effort in Southeast Europe; similar facilities may be implemented in up to two additional countries. In addition, mission-funded energy efficiency DCA facilities were approved in the past year for Kazakhstan ($15 million) and Georgia ($3 million).

Support for IFI Energy Efficiency Lending. In some instances the E&E Bureau is working with International Financial Institutions (IFIs) to introduce energy efficiency financing where conditions are not yet suitable for commercial lending. In Serbia, USAID provided technical assistance to design loan funds and prepare documents needed for a $20 million World Bank loan for energy efficiency improvements in hospitals and schools, approved in March 2004, and a $10 million GEF-funded revolving fund to

lend for energy efficiency investments to homeowners that is still under preparation. In Bulgaria, USAID provided assistance in support of EBRD and World Bank loans to Sofia municipality ($30 million and $26 million, respectively) for the rehabilitation of the Sofia district heating system that will increase energy efficiency by 20%. USAID's assistance is meeting conditionalities of the loans by introducing private sector participation by preparing a tender for a private management contract.

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What's New

New Energy Team Task Order Supports Urban Energy Initiatives

The Energy Team's Sustainable Municipal Energy Services task order can carry out work under its three themes: energy efficiency, indoor and outdoor air quality, and peri-urban energy access.

The Energy Team launched its Sustainable Municipal Energy Services task order earlier this year. This themed task order supports a wide range of urban energy issues, including energy efficiency, indoor and outdoor air quality, and peri-urban energy access. Four activities already have been launched. They are:

- An innovative energy efficiency service bidding program in Egypt;
- An LPG market development effort in northern Mozambique;
- An energy efficiency market assessment in Mongolia, in support of USAID and World Bank programs;
- A slum electrification workshop—in partnership with the World Bank, EdF and COELBA—scheduled for Brazil in the fall.

Running through 2008, the task order is available to USAID offices and missions seeking to implement quickly short or long-term activities that fall within the major themes. .

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Energy Team Forms New Global Development Alliance

The Energy Team's new Global Development Alliance, "Sustainable and Efficient Energy Use in the Developing World Alliance," was approved by the GDA Secretariat in early May. It is a joint partnership between the International Copper Association (ICA) and USAID and is designed to provide commercially viable policy and technical management practices to address energy problems in developing nations.

Two primary objectives of the program are to promote the efficient use of energy in an environmentally sustainable manner and to improve access to modern energy services in unserved and underserved areas. The GDA Secretariat has committed $250,000, the Energy Team $750,000 and ICA about US$4 million to the three-year program.

The International Copper Association (ICA) is the leading organization for promoting the use of copper worldwide. Copper products have demonstrated technical superiority in applications such as electricity generation, distribution and efficient use; in transportation and communications networks; and in water distribution and gas plumbing. Copper is highly durable -- making it more sustainable -- and lowers energy loss over some other traditional materials, thereby increasing efficiency and helping to reduce greenhouse gas emissions.

Given the copper-intensive nature of many energy-efficient electrical systems (e.g., transformers, motors), ICA has worked for more than a decade on the promotion of energy efficiency in developing countries, recognizing its importance for sustainable economic development. Its portfolio has expanded in recent years to include work on improved access to energy, improved distribution systems, safe electrical wiring and better power quality. In addition to providing direct funding support, ICA will also leverage the strategic efforts of the organization's Sustainable Energy, Environment and Health, Technology, and regionally-based initiatives in Asia, Latin America, and elsewhere. ICA also brings a network of experts, 36 member companies, and other partners operating

worldwide (e.g., the Common Fund for Commodities, UNDP) to the GDA.

GDA mobilizes the ideas, efforts and resources of governments, businesses and civil society by forging public-private alliances to stimulate economic growth, develop businesses and workforces, address health and environmental issues, and expand access to education and technology. Details are available at http://www.usaid.gov/our_work/global_partnerships/gda.

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Grants to Promote Better Home Cooking, Heating Practices

Through the Partnership for Clean Indoor Air, the USEPA, supported by USAID, has awarded US$1.2 million to 10 community-based programs aimed at reducing indoor air pollution from household energy use in Mexico, Guatemala, Honduras, Nigeria, Mauritania, Uganda, India and China.

Two-year pilot project grants totaling US$1.2 million have been awarded to 10 non-profit organizations in eight countries by USEPA, with financial support from USAID, in support of the Partnership for Clean Indoor Air's (PCIA) efforts to implement community-based programs that improve indoor air quality.

The grants will help promote the use of clean, reliable, affordable, efficient and safe home cooking and heating practices. More than 90 concept proposals and 30 full proposals were evaluated by an international panel of experts from industry and government. Three projects selected are in Latin America (Mexico, Guatemala and Honduras), three are in Africa (Nigeria, Mauritania and Uganda) and two each in India and China.

The PCIA was formed at the World Summit on Sustainable Development in 2002 to focus attention on the more than 2 billion people worldwide who burn traditional fuels indoors for cooking and heating (visit www.picaonline.org). According to the World Health Organization, indoor air pollution is the fourth largest health risk in the world's poorest countries.

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Recent Events

World Bank's Energy Week 2005; USAID Reports Progress in Electric Distribution, Slum Electrification

USAID's increasingly important role in improving the delivery of energy services worldwide was recognized in two key presentations made by the Energy Team's Gordon Weynand and Simone Lawaetz at the recent World Energy Week. "Our Energy Future" was the theme of the March meeting in Washington, DC, sponsored by the World Bank. It attracted energy development practitioners—including energy ministers and other government officials, energy industry leaders, donors, consultants, NGOs and financial executives.

Power Distribution Reform. USAID's Gordon Weynand presented key recommendations of USAID's recent report on "Improving Power Distribution Company Operations to Accelerate Power Sector Reform." The focus of Weynand's presentation was on improving the performance of distribution utilities in developing countries that experience excessive electric-system losses, low collections, poor service, theft and corruption, customer dissatisfaction and related problems. Improving metering, billing and collections, he said, are critical to success. For situations where far-reaching reforms are required, Weynand offered guidance on how a utility would design a comprehensive program to establish priorities and achieve success. Details on the USAID report are presented in the Publications section of this newsletter.

Slum electrification. Simone Lawaetz reviewed the findings of five pioneering slum electrification programs as part of a formal presentation and also participated in a panel discussion on the subject along with World Bank and Inter-American Development Bank staff, a Brazilian utility director, and other experts. Details on the Energy Team's work in slum electrification are presented in the Publications section of this newsletter.

Publications

Energy and Governance

The report on the "Nexus between Energy Sector Reform and Democracy and Governance" suggests that energy-sector restructuring should be designed in a manner that explicitly includes public involvement and offers best practices for success.

The Energy Team's "Nexus between Energy Sector Reform and Democracy and Governance" reviews the democracy and governance aspects of energy-sector reform. It examines the difficult history of reform programs and offers reasons why many programs have not been sustainable. Chief among these is a focus on efficiency with little or no attention paid to the social and political aspects of decisions. Result: The job of making the sector run more efficiently often has been realized only partially or not at all.

The report argues that the convergence of energy-sector reforms and democracy and governance principles is frequently found in the establishment and operation of an independent regulatory body to serve as both overseer of the reforms and protector of all stakeholders (government, utilities, investors and consumers). It discusses the need to design energy-sector restructuring in a manner that explicitly includes public involvement and it posits some indicators of effective public involvement. Finally, the report presents some best practices for designing successful reform programs, including the establishment and operation of an independent regulatory body.

To receive a copy of the report, contact: Kevin Warr, kwarr@usaid.gov.

Accelerating Distribution Reform

Many emerging market distribution utilities are in a state of chronic disrepair, both technically and fiscally. After an initial surge of interest in the 1990's, there has been a near complete disappearance of private investors. In the wake of regional financial crises and the undermining of utility sector investors in their home markets, there is no white knight on the horizon. This is a time for 'self-help' – something the handbook "Improving Power Distribution Company Operations to Accelerate Power Sector Reform" attempts to teach.

The handbook focuses on using operational improvements within a utility as a catalyst for reform. It presents an approach to improve distribution company performance based on project experience in the developing world, focusing on what the company management can do to design, implement, manage and refine improvement programs. Operational areas covered in the handbook include: network balances, metering, customer information systems/billing and collections, and improving cash collections.

From a technical and customer service perspective, improved utility operations will go a long way to addressing chronic distrust amongst consumer groups. At the same time it will begin to alleviate the burden on government resources by increasing fiscal performance. Policy, while plotting a bold course of reform, should also pragmatically reflect and be guided by operational realities at the utility level.

Ultimately, the goals of the operational improvements outlined in the handbook are to grow revenues; shrink all forms of loss; reduce the need for subsidies; minimize the time to realize these savings; and create the foundation for sustainable commercial operations.

To receive a copy of the report, contact: Ellen Dragotto, edragotto@usaid.gov

Vehicle Inspection and Maintenance Programs: International Best Practices

The "Vehicle Inspection and Maintenance Programs" report draws together a set of best practices that can help guide policymakers in first, determining whether an I/M program would be appropriate and timely and second, in designing a program to maximize its effectiveness in changing driver behaviour and improving air quality.

Vehicle emissions are a major source of air pollution in the developing world. A common policy tool for controlling such emissions is a vehicle inspection and maintenance (I/M) program. To help policymakers launch or strengthen I/M programs, the Energy Team commissioned a study in 2003—now complete—to identify best

practices that would help policymakers determine the appropriateness and timeliness of launching an I/M program as well as designing the program to maximize its effectiveness in changing driver behavior and improving air quality.

The rationale and concept for an I/M program is simple: Modern vehicles are dependent on properly functioning components to keep pollution levels low. Minor malfunctions in the air/fuel or spark management systems can increase emissions significantly. Major malfunctions can cause emissions to skyrocket. Studies suggest that a small fraction of the vehicle fleet typically is responsible for a disproportionate share of total vehicle emissions; thus an I/M program that reduces the emissions of these "gross emitters" can bring substantial air-quality benefits.

Though basic in concept, the detailed design and implementation of I/M programs is far from simple. A key message of the study is that "it is very difficult to implement an effective I/M program." The challenges are many, including the cost of testing equipment and skills required to use it; the lack of incentive for drivers to repair pollution control equipment if it does not affect their ability to drive; and most of all, the numerous ways that drivers can evade I/M requirements.

However, there are success stories that provide valuable lessons. The report highlights eight "essential" best practices, gleaned from analysis of the successes and failures of I/M programs worldwide. Four concern "institutional design" practices. For example, the report shows that an I/M program is more effective if inspections are conducted using "test-only" facilities, rather than a relatively large number of decentralized or "test-and-repair" facilities. With respect to the relative roles of the private and public sector, it recommends that Government set the policy framework and provide overall management of the I/M program while private contractors perform the actual inspections. The remainder of the eight "essential best practices" addresses test procedures and emission standards, enforcement and compliance promotion, and resource management. The specific cases of Mexico and New Delhi are scrutinized in detail and illustrate the benefits in adhering to these best practices.

To receive a copy of the report, contact the Energy Team's Simone Lawaetz, slawaetz@usaid.gov.

The report also is posted at www.usaid.gov/our_work/economic_growth_and_trade/energy/pubs/bestpract_vehicle_maint.pdf.

Innovative Approaches to Slum Electrification

Electricity is almost universally available in urban and peri-urban slum areas, but a closer look reveals that it is often stolen through third-party illegal service providers, expensive and of poor quality. Recent trends to commercialize or privatize electricity companies have increased pressure on distribution companies to reduce losses and control theft as well as expand and improve the quality of service in these poor neighborhoods. In practice, these companies have faced great difficulties in meeting these responsibilities, given slum-dwellers' ease of reconnection through illegal service providers, risks to the physical safety of company staff, and the high costs associated with providing service in low-revenue areas. Moreover, the lack of legal tenure of slum dwellers and the physical conditions of slum areas – narrow, winding alleys and poorly constructed houses – present additional, formidable challenges.

Few research papers or studies have explored the complex set of issues involved in legal service provision to slums or systematically reviewed approaches taken by electric utilities to address them. To fill this gap and generate a broader discourse on the subject, the Energy Team initiated a study in 2003 to identify innovative approaches for expanding access to legal electricity service in urban slums. Based on an initial literature review, which described current, and past slum electrification efforts, USAID selected for investigation five slum electrification projects, which varied by region and approach (see sidebar).

Some of the key findings from this assessment are described below:

Partnering with intermediaries. All of the programs used intermediaries to help the electric company and other program stakeholders better understand the starting conditions they would encounter within the communities, the barriers to traditional service delivery that had soured the environment for these services in the past, and most important, to assist in the development of a program that would work under the extant conditions.

Controlling theft. A fundamental reason for theft of power is the relative ease for slum dwellers of obtaining illegal access compared with the barriers to obtaining legal connections. Each electric company in the cases reviewed recognized that it must compete with the entrenched illegal access—in terms of price, ease of payment, and quality, reliability and accessibility of service. Furthermore, technologies such as prepayment meters, shielded cables and meters, and remote monitoring were deployed.

Facilitating payment. All of the electric companies studied redesigned their service delivery to fit the needs of the poor communities they were targeting. A common element was community-based customer service centers for easier payment and complaint resolution. Flexibility in payment options and criteria for cut-off may be necessary given the uncertain income streams of slum residents. All programs subsidized and financed connection fees.

Reducing the cost of service. All electric companies considered measures to reduce the cost of connecting and serving slum residents. For example, PN Energy lowered costs by installing standardized meter boxes and using a ready board for internal connection, which eliminated the need for internal wiring. MERALCO located all individual meters on a meter wall at the edge of the slum, thereby eliminating the cost of extending distribution lines into the community.

To comment on or to receive a copy of the report, contact the Energy Team's Simone Lawaetz, slawaetz@usaid.gov.

Thumbnail Sketches of Five Slum Electrification Efforts

Manila, Philippines, MERALCO's Depressed Area Electrification Program. Communities were electrified by bringing distribution lines to meter walls at the perimeters of the slums. Individual meters were placed on the meter walls and households were allowed to install their own wiring to reach their homes. Financing was offered for internal wiring.

Cape Town, South Africa, PN Energy's Khayelitsha Electrification Project. A community-based distribution company was established to dramatically improve the quality and reliability of service. Prepayment meters were installed to help households stay within their budgets. Subsidies and financing were provided for the connection fee and "ready-boards" eliminated the need for internal wiring.

Rio de Janeiro, Brazil, LIGHT's Program for Normalization of Informal Areas. Community agents intermediated for the electricity company and local events were used to facilitate program acceptance. Debt relief and subsidized connection fees made it easier for households to enter the program.

Salvador, Brazil, COELBA's Community Agent Program. The electricity company worked through an NGO to hire local agents to work with the community. These agents helped identify and resolve problems as well as provide education on energy conservation practices. The electric company replaced inefficient lighting and refrigerator seals and unsafe and inefficient internal wiring in homes, provided subsidies and financial assistance for connection fees and established convenient locations for bill payment outlets.

Ahmedabad, India. Ahmedabad Electric Co.'s Slum Electrification Program linked up with ongoing slum upgrading efforts in partnership with NGOs, local government and residents. Financing was provided for the subsidized connection fee. Local residents were hired to read meters.

Mark Your Calendar!

Infrastructure and Economic Growth Course

Infrastructure and Economic Growth Course, developed by the Office of Energy and Information Technology, will be conducted July 13-15 in Washington, DC. Space is limited. Reserve your seat today through Ellen Dragotto (edragotto@usaid.gov). And be sure to e-mail an SF-182 to Ellen by June 10!

USAID is placing increased importance on infrastructure, and USAID Administrator Andrew Natsios requested that EGAT enhance its ability to support field missions in the design and implementation of such projects. As part of this effort, the Office of Energy and Information Technology will conduct a course on Infrastructure and Economic Growth, July 13-15, in Washington, DC.

The goal of the course is to create a common and shared technical knowledge base for all Economic Growth Officers and staff involved in infrastructure. The course will:

- Provide background on the relationship between infrastructure and economic growth;
- Explain infrastructure development best practices, frameworks, and methods used by USAID and other leading donor agencies;
- Allow structured interaction among Economic Growth Officers to develop the practical skills related to infrastructure problem analysis, program development and activity design.

The primary resource for this course is the World Bank's "Reforming Infrastructure—Privatization, Regulation and Competition," by Ioannis N. Kessides. Participants will receive a copy of the book.