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USG Climate Technology Cooperation Projects and Activities: 1998 November 1998



US Government Support for Climate Technology Cooperation

The United States government is committed to working with other governments and the private sector to advance cost-effective technology solutions to the global challenge of climate change. This document describes current programs by U.S. government agencies that facilitate the transfer of technologies and build capacity in developing countries. These programs and activities signal continuing and vigorous U.S. commitment to sustainable development and the objectives of the UN Framework Convention on Climate Change (UNFCCC).

Article 4.5 of the UNFCCC commits developed countries to “take all practicable steps to promote, facilitate, and finance, as appropriate, the transfer of, or access to, environmentally-sound technologies and know-how to other parties.”

In fulfillment of this commitment, the U.S. Agency for International Development, the Department of Energy and the Environmental Protection Agency are working around the world to facilitate the transfer of climate-friendly technology and practices. These programs support human and institutional capacity building in developing countries through information exchange, technical assistance, training, technology demonstration, and financial assistance.

These programs, which seek to engage local stakeholders in finding solutions to the dual global challenges of sustainable development and climate change, are founded in a belief that market-based approaches are necessary if the results are to be sustainable and replicable.

MULTI-REGION PROJECTS

Energy Efficiency Development

USAID's Global Environment Center awarded a grant to support the development of energy efficiency activities in several countries including India, Ghana, Ukraine. These activities focus on the development of municipally-based efficiency programs using indigenous NGOs and US efficiency experts.

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Energy Efficiency Harmonization, Distribution, and Promotion

USAID's Global Environment Center provides expertise in the area of energy efficiency, particularly with regard to regional harmonization of standards, distribution of second-hand equipment, and promotion of initiatives to leverage private sector investment in Asia and Latin America.

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Energy Efficiency Standards, Economics, and Policy Program

An interagency agreement between USAID's Global Environment Center and USDOE supports LBL's provision of expertise in energy efficiency standards, and energy economics and policy related to GHG emissions in developing countries.

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Energy IQC

USAID's Global Environment Center established this mechanism to support USAID missions throughout the world in the areas of energy sector policy and planning, energy efficiency, renewable energy, and energy and environmental infrastructure and technology transfer. Three prime firms and over one hundred sub-contractors provide services in the aforementioned areas. A few examples of the activities executed under the energy IQC are as follows: power sector reform in Lithuania, power sector restructuring in Central America, development of a school heating program in Armenia, execution of an electricity sector policy support group in Egypt, consulting on the design of a sustainable tourism program in Jamaica, regulatory support to the power sector in Poland, development of a clean production strategy in the Andean region, and increasing the use of clean technologies in the mining sector in the Andean nations.

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Environmental Management Systems (EMS) Task Order

The primary objective of this activity conducted by USAID's Global Environment Center is to demonstrate the feasibility and benefits of using an EMS approach to reducing pollution in municipalities. Through activities in the areas of energy efficiency, reduction of GHGs, and pollution prevention and control, EMS promotes a holistic approach to improving environmental performance continuously over time.

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International Cleaner Production Cooperative

<http://es.epa.gov/cooperative/international> - The International Cleaner Production Cooperative provides a single on-line point of access to cleaner production information from around the world. The Cooperative retrieves data on cleaner production from diverse Web sites maintained by international organizations, industry groups, non-governmental organizations, and national and local governments.

This site allows users to retrieve technical and policy data through a sophisticated search engine that supports both simple and complex queries. Searches can be done by individual database, specific region of the world, or through all the member sites around the world. Recent headlines, news, conferences and events related to member sites are highlighted and updated regularly on the Cooperative's front page. Queries can be expedited through pre-selected, guided searches and industry sector-specific materials. Users are also invited to recommend the addition of more member sites and relevant information.

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International Co-Control Analysis Project Estimating the Environmental Benefits of Greenhouse Gas Reduction

The U S Environmental Protection Agency (U S EPA) is launching a new initiative to assist developing countries in evaluating the environmental benefits of technologies and policies for reducing greenhouse gas emissions. This initiative is referred to as the International Co-Control Analysis Program or ICAP. Under ICAP, the U S EPA is proposing to provide technical and financial support to 6 developing countries to assist them with analysis of the environmental benefits of measures that will contribute to

reductions in greenhouse gas emissions The U S EPA is proposing to initiate this program in collaboration with the countries of Argentina, Brazil, Chile, China, Korea, and Mexico The work will be lead by teams of experts from these countries and will be tailored to the needs and priorities of each country It is anticipated that this work will focus primarily on the air pollution benefits of clean energy technologies, but could also address water and soil pollution and non-energy technologies if appropriate

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International Council for Local Environmental Initiatives

USAID's Global Environment Center's Cities for Climate Protection (CCP) campaign is engaging a group of cities and national government officials in two developing countries in an effort to reduce local GHG emissions Activities include recruitment, technical assistance, local capacity building, and networking with US and other cities participating in the CCP program

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International Industrial Efficiency Assessments

The U S DOE is providing technical support to and collaborating with developing countries to encourage and implement measures that increase industrial energy efficiency and productivity U S DOE and several leading U S universities are helping build developing countries' technical and institution capacity to provide recommendations for local manufacturing plants to control costs through energy efficiency improvements, increased productivity and waste reduction Technical assistance includes training by U S engineering faculty/student teams, and the analytical tools and experience developed from the domestic U S program By helping to adapt these to local conditions, facilitating collaboration between in-country government agencies, local universities, and international funding sources, the U S DOE creates the local capacity for these programs to be self sustaining

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International Motor Challenge Program

The U S Department of Energy's Office of Energy Efficiency and Renewable Energy is partnering with developing countries to build on the U S experience and implement country specific programs to help

local manufacturers reduce energy costs and increase productivity through improved industrial motor systems. The U.S. domestic U.S. Motor Challenge program develops and disseminates information, tools, and best practices to assist U.S. industry to make more-informed decisions regarding the management of motor-driven systems of all types: motor-driven pumps, fans, compressors, etc. DOE's is working with several developing countries to adapt this highly successful effort to their local conditions. The program has already been put in place in China and India, and can serve as a model for Latin America and Eastern Europe promotional efforts. Particular attention is given to developing Chilean and Ukrainian stakeholder networks, and to customizing U.S. Motor Challenge tools and products to the specific countries.

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No Regrets Case Studies

USEPA supported a series of case study reports in developing countries to illustrate successful policies, programs, and projects which have resulted in reduced greenhouse gas emissions while also producing other benefits in promoting economic development and reducing local environmental impacts. The project was implemented through the Pacific Northwest National Laboratory (PNNL) and the International Institute for Energy Conservation (IIEC) with the case study reports drafted by experts from China, the Philippines, Thailand, and Brazil. This enables developing country decision makers to see examples of no-regrets GHG mitigation options. EPA has sponsored case study briefings for key policy makers.

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North-South Dialog on Climate Change: Good Practices, Technology Innovation

USEPA with several other governments and the Climate Technology Initiative (CTI) supported a consortium of non-governmental organizations to promote a North-South dialogue on climate change. The aim is to promote technology co-operation and new partnerships for an effective forum to increase mutual understanding and exchange of views, which takes on critical importance. The first phase of this new dialogue took the form of three regional workshops, each convened by a major non-governmental organization, that brought together a diverse group of senior business executives, government officials, and representatives of academic and other organizations. The attendees also included business executives from major companies (located in OECD countries) that are interested in emerging opportunities for technology co-operation.

The first results of the regional workshops were reported to the Parties on 22 October 1997 at the SBSTA session in Bonn. The results to date illustrate the range of "win-win" or multiple benefit actions already underway that simultaneously promote sustainable development and greenhouse gas mitigation, demonstrate the importance of enhanced efforts for capacity building and networking, and highlight the

need to expand technology co-operation between Annex 1 and Non-Annex 1 Parties A short summary final report for the regional workshops was distributed to the Parties and discussed at a COP 3 Seminar on 3 December 1997

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Peer Exchanges

USAID's Global Environment Center sponsors NASEO's establishment of peer exchange programs between state energy offices in the US and selected counterparts in the Philippines, Mexico, and Brazil

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Renewable Energy Applications and Training

USAID's Global Environment Center awarded Winrock International a contract to establish a network of Renewable Energy Program Support Offices (REPSOs) to build local capacity in renewable energy, accelerate its commercialization, and increase access to energy in rural areas

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Renewable Energy Applications and Training

USAID's Global Environment Center awarded a contract to Winrock International to assist the Environment Center with the design, development, implementation, and evaluation of activities related to renewable energy and the reduction of greenhouse gas emission

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Rural Electrification Services

USAID's Global Environment Center supports NRECA's identification of affordable options for the provision of electrical services to rural areas. DOE also provides technical assistance to support the development of pilot renewable energy and hybrid electrification projects.

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Staff Assistance to World Bank

NREL is increasingly supporting the World Bank, including assigning a senior staff person to the World Bank for two years in support of the Bank's Solar Initiative and related renewable energy project and policy activities in developing and transition countries. Specific staff support to Bank activities include a) support for the Bank's project identification mission to China which is expected to lead to a \$200-300 million loan for renewables, b) co-leading the Bank team that developed the Solar Development Corporation, a new lending institution being created by the Bank for photovoltaics, and c) creating and managing the activities of the Energy and Environment Steering Committee - a technology advisory committee dealing with renewables and efficiency that include developed and developing country members. Project specific support is being provided in China, Cape Verde (loan pending), Malawi, South Africa, Botswana, Zambia, Indonesia, Philippines and Brazil.

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Strategic Planning on GCC, Renewables, and Energy Efficiency

USAID's Global Environment Center supports Oak Ridge National Laboratory (ORNL) in the provision of strategic planning services in the area of renewable energy and energy efficiency in key GCC countries.

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Sustainable Urban Management IQC

USAID's Global Environment Center is expected to include environmental management systems activities. As part of this effort, projects that reduce GHG emissions will be implemented under the broader context of improving environmental management.

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Technology Cooperation Agreement Pilot Project

USAID, USEPA and USDOE support the TCAPP to assist in fostering private sector investment in developing countries. The TCAPP provides a vehicle for clean energy companies to remove barriers and accelerate investment in new energy markets. The pilot phase was launched in August, 1997 to facilitate technology transfer of clean energy technologies in Brazil, China, Indonesia, Kazakhstan, Mexico, and the Philippines. Korea has been invited to join in this effort in FY99. Clean energy sources include renewable energy, energy efficiency, and natural gas. The Business Council for Sustainable Energy, an umbrella organization for companies in the natural gas, renewable energy, and energy efficiency sectors - with alliances worldwide - coordinates private sector participation and outreach activities globally under the TCAPP.

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U S Climate Studies Program

The U S Climate Studies Program (CSP) was initiated in 1992 in order to facilitate participation in the UNFCCC by developing countries and countries with economies in transition. The CSP offers funding and expert assistance for the following activities:

1. creating a national inventory of greenhouse gas emissions, assessing vulnerabilities to climate change and evaluating strategies for mitigating emissions and adapting to potential impacts,
2. creating a process for developing and implementing climate change related policies and measures,
3. preparing climate change action plans
4. Promoting diffusion of mitigation and adaptation technologies,
5. Developing information to further regional, national and international discussions.

Funded and staffed by five government agencies, the CSP is currently assisting 55 countries in every region of the world and has issued three major synthesis reports documenting the results of these studies. The CSP has also sponsored regional and global workshops to promote discussion and information sharing. In 1995 the CSP began the next phase, and is now assisting eighteen countries with preparing their national action plans. An additional twenty-five countries have requested similar assistance.

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Utility Partnerships

USAID's Global Environment Center supports the development of partnerships that focus on the implementation of regional programs, including technical assistance missions, seminars, and exchange visits, related to grid regulation, environment impact, and system reliability

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AFRICA REGION

East Africa

Livestock Nutrition and Methane Reduction Project

Livestock methane measurement program and examination of livestock feeds on emissions in an effort to identify ways to improve the diets and productivity of large ruminant animals, reducing methane emissions per unit of meat or milk produced

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Egypt

Power Sector Support Project

USAID/Egypt is supporting accelerated private sector-led growth, this project emphasizes support for improving the policy environment to increase efficiency and sustainability. Specific activities include support for establishment of a regulatory commission that will rationalize the process of setting rates, and support for raising the rate of return on investment in the sector. Support is also provided for infrastructure development

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Egyptian Environmental Policy Project

USAID/Egypt's project addresses policy reforms throughout the environmental sector, including solid waste management, reducing lead emissions, and the use of cleaner fossil fuels in motor vehicles

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Cairo Air Improvement Project

USAID/Egypt's project addresses factors in air quality including inefficient energy use in industry, ineffective pollution standards for industry and transportation, and lack of a sustainable institutional framework to manage the threat to air quality. It supports pilot activities (such as adoption of pollution control devices at plants), new technology applications (such as use of compressed natural gas in public buses), and institutional constraints (such as strengthening the capacity of the Egyptian Environmental Affairs Agency)

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Climate Change Workshop

EPA, with funding from the U S -Egypt Science and Technology Joint Fund (managed by the State Department) is working with Egyptian counterparts to organize a Global Climate Change Workshop in Cairo. The workshop is still in the developmental stages, but will most likely focus on Egypt's National Action Plan, and implementation of that plan, including technology projects. The workshop is tentatively scheduled for March, 1999.

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Ghana

Industrial Efficiency Assessments Cooperation with Ghana

Starting in 1996, the U S DOE has worked to establish a self-sustaining program in Ghana to perform assessments and implement measures to save energy, minimize waste and increase productivity in the manufacturing sector. The U S DOE has facilitated collaboration with the Ghanaian Ministry of Mines and Energy and the University of Science and Technology in Kumasi to adapt a highly successful domestic experience with the Industrial Efficiency Assessment program to local conditions. U S DOE provided Ghanaian personnel technical assistance and training in several areas including participating in assessments at U S manufacturing plants with U S university teams. DOE provided procedures for doing assessments and implementing measures to reduce energy costs. The Ghana team and Texas A&M

University also conducted several assessments in country, including recommending several energy efficiency improvements at a plywood and veneer plant DOE also provided follow-up training through additional joint assessments and workshops The Ghana Energy Efficiency Foundation supports these efforts by develop informational materials, and U S DOE's Lawrence Berkeley Laboratory is also helping the Foundation promote local energy efficiency codes, standards, and labels

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Technical Support for Energy Services Companies

U S DOE is providing technical support to develop rural energy services companies to provide a range of energy services including, photovoltaic systems, to targeted regions U S DOE is collaborating with the Ministry of Mines and Energy, and funding for hardware is provided by a U N Development Program grant Allan Hoffman

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Cooperation with The Energy Foundation to provide technical support and potential workshop training on energy efficiency and climate technology opportunities

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South Africa

Energy Efficiency in South Africa

This effort promotes and supports voluntary energy efficiency program development in South Africa, working with the Green Buildings for Africa and the Clean Commute programs It provides technical assistance support for program design and energy auditing

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Energy Efficient Housing in South Africa

This USAID/South Africa project is promoting energy efficient housing designs to increase savings in space heating and CO2 emissions and is currently being implemented in two communities. The aim is to develop a low cost model for environmentally sound and energy efficient housing that can be incorporated into South Africa's ongoing housing delivery program.

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South Africa Electricity Policy Project

The U S DOE is providing technical and analytic assistance to the Department of Minerals & Energy (DME) and the RSA National Electricity Regulator (NER) on matters of electricity market structure and regulation, and electrification issues. This effort is: a) identifying several regulatory frameworks from which the RSA could choose, b) developing a pricing policy consistent with economic development goals, c) helping in organizing a conference on Regulatory Cooperation in the Southern African Region, d) policy assistance on electrification program design, and e) helping with strategic planning for the NER.

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Energy Efficiency Policy and Program Cooperation

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Renewable Energy Technology Cooperation

The U S DOE is collaborating with the Department of Minerals and Energy and providing technical support to design and implement renewable energy technology programs including Technology areas include photovoltaic systems.

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ASIA - PACIFIC REGION

Asia - Regional

USAEP Technical Representatives

Technology representative offices opened in Korea, Taiwan, Hong Kong, Malaysia, Singapore, India, Thailand, Indonesia and the Philippines promote demand for environmental improvements in Asia, and facilitate access to U S technology and partnerships

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USAEP Environmental Technology Fund II

NASDA manages a fund providing matching grants to promote relationships between U S and Asian entities, in support of economic development and environmental improvements, including environment and sustainable energy

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USAEP NGO Business Partnerships

The Asia Foundation implements and manages an incentive grants program designed to strengthen links between Asian NGOs and Asian businesses, fostering public-private partnerships which advocate or demonstrate environmentally responsible business practices

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USAEP Environmental Exchange Program (EEP)

USAEP provides environmental exchange opportunities and seeks to build and strengthen ties between U S and Asian entities to help Asians address their environmental problems through U S technology and experience

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USAEP Improved Environmental Management in Asia

USAID provides Environmental Action Teams, training, and short-term technical assistance designed to strengthen local, regional national environmental management practices

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USAEP Promotion of Pollution Prevention and Clean Technology Concepts (P2/CT), Technology and Equipment, and Education in Asia

USAEP provides education to promote pollution prevention and facilitate the sale of U S technology and expertise, and promotes the development of local expertise on pollution prevention

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USAEP Environmental Professional Association Development

USAEP is supporting the formation of Asian national environmental professional membership associations in Thailand, Indonesia, Singapore, India and the Philippines USAEP also provides assistance with recruitment, training in association management, technical information on many environmental issues, and matching grants for local associations

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USAEP State Environmental Initiative

This activity, which involves all 50 U S states, involves helping state organizations identify and develop environmental projects in Asia, and providing grants to implement projects

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Asia Pacific Initiative for Renewable Energy and Energy Efficiency

Technical cooperation to increase the acceptance and understanding of renewable energy technologies in Asia through training workshops, development of model regulations, and technology demonstrations Key participating countries are China, Indonesia and Philippines

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Bangladesh

Ruminant Livestock Methane

Assessments of the feasibility and benefits of programs to reduce methane emissions through improved feeding methods

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China

Modeling National Economic Impacts of Climate Change Policy

This joint effort with national experts in economic modeling and environmental policy will develop improved capacity for analysis of costs and other economic impacts of policies to limit greenhouse gas emissions, including analysis of the economic effects of flexibility mechanisms

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Coalbed Methane

Assessments and pilot projects for capturing abundant gas resources at Chinese mines, with concurrent mine safety, power production, and climate benefits. A Coalbed Methane Information Clearinghouse is housed at the Ministry of Coal and has conducted considerable outreach to US and other companies interested in this market. The Clearinghouse publishes a journal in Chinese and English, has hosted several domestic and international seminars, and has developed with EPA an economic analysis model to identify profitable projects to reduce methane emissions.

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Integrated Gasification Combined Cycle (IGCC) Power Generation To Achieve Emissions Reduction

Technical cooperation with China to construct an IGCC demonstration power plant which uses 1/3 less water and provides up to 23% CO₂ reductions through efficiency gains. Cost efficiency studies, research and identification of manufacturing capabilities in China, and workshops and training on IGCC technology and benefits.

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U S - China Energy and Environment Technology Center

Technical cooperation with China to disseminate information on energy and environmental technology related to electric power Information exchange, demonstrations, and research on energy and environmental technologies such as clean coal, oil and gas Partners are EPA, U S Department of Energy, Tulane University, China's State Science and Technology Commission

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China Energy-Efficient, CFC-Free Refrigerator Project

This project aims to transform the Chinese refrigerator industry to effectively produce and market CFC-free, energy-efficient refrigerators Training for refrigerator producers, technical assistance for increasing compressor efficiency, and technical support to factories for conversion to energy-efficient refrigerator production

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Technical Assistance for Energy-Efficient Lighting in China

Provide training at China's State Bureau of Technical Supervision and the Beijing Energy Efficiency Center in the development of standards for energy-efficient lighting in China, and in test procedures to improve production in China of energy-efficient fluorescent lamps

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Technical Assistance to Improve Energy Efficiency of Air Conditioners in China

This project will assess and assist market transformation efforts to attain market dominance for energy efficient air conditioners Specific efforts in China include monitoring air conditioner energy use and operating patterns, development of efficiency standards, and addressing technical and market barriers to air conditioner efficiency improvements

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Halon Phaseout Program

Training of Chinese fire protection experts in operation of Halon 1211 recovery/recharge machines, and fire-extinguisher maintenance practices to prevent unnecessary Halon emissions. Three workshops held in 1993 with 128 experts trained and 23 machines delivered for operation in various cities and provinces throughout China. Initial assessments completed of Halon use in major manufacturing sectors.

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Energy-Efficient Building Demonstration in Hong Kong

Demonstration of energy efficiency methodologies and technologies in a government building.

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Wind Energy Assessment

Increase wind-energy technology by wind mapping and site-specific monitoring, and demonstrate its clean, cost-effective, electric-generating capacity.

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Landfill Methane Program

Technical support in cooperation with UN/GEF to develop a landfill methane recovery system.

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Mobile Sources

Policy and technical assistance in pursuit of phase out of lead in gasoline and vehicle emissions controls, including public awareness components

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Nationwide Air Quality Monitoring Network

EPA will provide support in Phase I (eleven cities) of the development of an integrated nationwide air quality monitoring network, and EPA intends to cooperate on Phase II which will extend the network to 47 cities. National and local level officials will receive training through the State of California and at RTP, and US experts will provide on-the-ground advice in siting and calibrating equipment, data collection and analysis, forecasting. Project will assist China in tracking and controlling pollution sources and in raising public awareness.

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Technology Seed Grant to National Assoc Of State Development Agencies

Technical cooperation with China to transfer U S environmental technologies to areas of critical need in China. NASDA provides assistance to U S state development agencies which fund demonstrations of U S environmental technologies in China. Technologies include Energy Improvements for Juxian Pulp & Paper Mill, Electric Bicycle Design Modification and Demonstration, Air Quality Monitoring.

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Transfer of Voluntary Programs

Outreach on Green Lights and other voluntary programs as well as on broad uses of the MARKAL model. Workshop in March 1997 on energy efficiency voluntary programs and technologies, in Taipei. Information exchange and training on the benefits and modalities of Green Lights and other voluntary programs, and training and development of a Hong Kong MARKAL model.

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Small PV/Wind Technology Applications for Rural and Remote Development in China

DOE and the Chinese Ministry of Agriculture sponsored a workshop to a) provide information to U S and Chinese businesses on rural electrification opportunities and plans for China, b) provide a forum to facilitate networking of U S and Chinese company representatives, c) and develop a strategy for fostering

U S /Chinese joint venture and other business activity in rural and remote renewable energy electrification in China

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Energy Efficient Office Building Demonstration Project in China

The U S DOE and the Chinese Ministry of Science and Technology are collaborating on the demonstration of clean energy building technologies. Experts from NREL and LBNL on solar and energy efficient buildings have met in Beijing, China with the Ministry of Science and Technology and the Chinese building design team to review preliminary plans for the building. The U S team's recommendations would reduce energy use and carbon emissions by an estimated 50% if implemented.

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China Biomass Collaboration

U S DOE provided technical assistance and collaborated with the Chinese Ministry of Agriculture and the Chinese Center for Renewable Energy Development to develop the first complete assessment of biomass and bioenergy potential for China. The assessment of indigenous technological and market potential was jointly prepared and published in a bilingual format for both countries. It is expected to lead to collaborative market developments and joint ventures.

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Energy-Efficient Industrial Motor Systems in China

As part of the International Motor Challenge program, the U S DOE and China are working to facilitate the development, commercialization and use of high-efficiency motors, motor speed controls, and other technologies and practices to improve motor system efficiency in China. A study on the Chinese motor market, funded by DOE, was conducted by the American Council for an Energy-Efficient Economy with the Beijing Energy Conservation Institute and the Shanghai Electric Apparatus Institute. In addition, the US team has provided data on US motors programs and products to China and is helping US motor manufacturers assess opportunities for joint ventures in China. Efforts are now focused on developing and conducting a Chinese Motor Challenge Program. As part of the activity, data is being exchanged on motor systems, including fans, compressors, and pump systems.

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Electric Vehicle Technology Development

The U S DOE and the State Science and Technology Commission recently expanded technology cooperation into the area of electric and electric-hybrid vehicle development. The agreement provides for technical cooperation on advanced batteries, motor control systems, fast charging, electric vehicle body design, and residential and fleet charging. It also provides for information exchange on electric vehicle infrastructure requirements, building codes and safety standards, non-financial and regulatory incentives, and electricity rates. The cooperation aims to increase the commercialization potential of these technologies with benefits for both China and the United States.

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India

Dairy Nutrition Improvement and Methane Reduction Program

A feasibility study has been conducted and a pilot project is in development to demonstrate feed technology. Training has been provided regarding livestock feeding technologies.

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Coalbed Methane Demonstration Project

EPA has worked with the GEF and Coal India on a coalbed demonstration project.

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Ruminant Livestock Methane

EPA has supported an assessment of the feasibility of launching a national program to reduce methane emissions through development of feed supplement industry, with added benefit of improving animal productivity

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Ramakrishna Mission Economic PV Development Initiative

The U S DOE has supported a sustainable rural electrification program cost shared 50-50 with India's Ministry of Non-Conventional Energy Sources in collaboration with the Ramakrishna Mission, a humanitarian organization in West Bengal, India PV system owners invest money that would otherwise be used to purchase more expensive fossil fuels DOE provided training to Mission personnel who trained additional trainers The Mission provides banking, installation, and maintenance functions for the project Over 300 systems were installed in seven villages in the isolated Sundarbans area An additional two thousand systems have been sold in the area following the successful demonstration A "before and after" impact study indicates high customer satisfaction and a desire to purchase additional systems with little or no subsidies required

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Indonesia**Forestry and Terrestrial Protected Areas**

USAID/Indonesia's program supports sustainable management of forestry resources through better technical practices and policy frameworks for industry, greater community and locally-based resource management, capacity building of private institutions for increasing awareness of environmental issues, and increased participation of women in natural resources planning and management

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Coordinated Local Environmental Action Networks (CLEAN)/Energy Project

USAID/Indonesia's project aims to reduce the level of pollution emitted in power generation while meeting demands for increased electric power This is accomplished by providing assistance in restructuring Indonesia's state electric utility, promoting energy efficiency, and supporting the development of renewable energy

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Windpower for Islands and Nongovernmental Development (WIND) Project

USAID/Indonesia's project aims to introduce wind power technology in the eastern islands of Indonesia, to involve local NGOs on these islands in providing local power needs, primarily through technology transfer. WIND has mapped wind power resources and installed wind monitoring equipment in 10 locations, and is conducting studies to determine the feasibility of wind-based generation and transmission projects, including commercial possibilities. It will establish wind power demonstration projects at 20 sites, and is building the capacity of local NGOs and community members to establish and operate small, wind power generation and transmission facilities.

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Wind-diesel retrofits in Indonesia

The World Bank requested NREL's assistance to perform a market assessment of the potential to improve the efficiency of several thousand isolated diesel plants in Indonesia with enhanced controls or wind turbines. NREL identified several promising sites for pilot projects and a near to medium term potential of over 22 megawatts of wind power.

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Republic of Korea

GHG Reduction Program

Cooperative program to developing and implementing on-the-ground greenhouse gas reductions programs. EPA's proposed activity would bring together US and Korean counterparts to choose 3-5 technologies and/or sectors in Korea which offer good opportunities for clean technology applications. These projects are funded by the USAID/USAEP program.

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Modeling National Economic Impacts of Climate Change Policy

This joint effort with national experts in economic modeling and environmental policy will develop improved capacity for analysis of costs and other economic impacts of policies to limit greenhouse gas emissions, including analysis of the economic effects of flexibility mechanisms

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Nepal

Dairy Nutrition Improvement and Methane Reduction Program

A feasibility study has been conducted and a pilot project is in development to demonstrate feed technology

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Ruminant Livestock Methane

Assessments of the feasibility and benefits of programs to reduce methane emissions through improved feeding methods

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Forestry/Biodiversity Conservation

USAID/Nepal's program supports increased sustainable production and sales of forest and high-value agricultural products. Participating community groups are achieving sustainable production increases. The program provides technical assistance, marketing and nutrition assistance to 500 production and marketing groups through strengthened government capacity to provide extension services. It also supports natural resource legislation that expands community and private management of forest and water resources. More than 1,000 community forest user groups are managing communal forest areas.

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Private Hydropower Development

USAID/Nepal's program aims to increase private participation in hydropower development to promote US investment in Nepal's energy sector, contribute to greater regional cooperation for water resource management, and, through export of power to India, reduce that country's dependence on thermal generation that contributes to global warming

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Philippines

Support Developing Country Constituencies for Climate Mitigation

Compilation and dissemination of information regarding the environmental and economic self-interest of developing country strategies focused on energy efficiency and renewable energy

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Voluntary Program Pilot Project

Planned pilot project on reducing greenhouse gas emissions through the use of voluntary energy efficiency and pollution prevention programs, with a focus on the food processing industry. This is funded by the USAID/USAEP program. The program would work with key organizations in the Philippines to improve access to U.S. technical and policy information for cleaner production, including EPA's "Envirosense" database and information cooperatives.

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Energy Efficiency Malls Program

Technology Transfer regarding energy efficiency partnerships and development of a recognition of achievement awards program

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Philippines Climate Change Mitigation Program

To mitigate GHG emissions, USAID/Philippines collaborates with 10 U.S. government agencies, 12 GOP agencies, and several environment sector nongovernmental and private organizations. The Agency's

response focuses on establishing a favorable policy and regulatory climate, increasing the availability of financing from public and private sector institutions, building capacity within host-country organizations, and transferring technologies. The Agency's technical assistance to improve energy sector policies is also providing the basis for other donors and multilateral banks (e.g., the World Bank and the Asian Development Bank) to extend energy loans to the Philippines.

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Green Malls Project

USAID/Philippines has been providing technical and policy assistance to the Manila Electric Company (MERALCO) to design and launch a Green Buildings program. The International Institute for Energy Conservation and MERALCO have designed and launched a voluntary program with shopping malls to implement energy efficiency measures and investments. Shopping malls are one of the largest consumers of energy in the city of Manila. A demonstration site to showcase Green Buildings is located in a high-profile shopping mall in the Metro Manila area, more malls will be selected in the near future.

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Environmental Peer Exchanges

USAID's Global Bureau has set up a series of Peer Exchanges in three USAID-assisted countries, including the Philippines. The purpose of the Philippines peer exchange is to bring together Hawaiian state energy officials with the Philippine Department of Energy to transfer Hawaiian expertise that could assist the Philippines in the use of energy-efficient technologies. This is part of a larger exchange program covering three USAID-assisted countries.

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Clean Coal Technology PASA

USAID/Philippines is supporting a new Clean Coal Technology Advisor who will work with the Philippine Department of Energy (PDOE) on clean coal technology, power sector restructuring, natural gas development, information systems, renewables, and energy planning and pricing.

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Thailand

Landfill Methane Feasibility Study Project

EPA and Thai officials performed a feasibility study to examine opportunities for methane recovery projects. One demonstration site is expected to come on-line this year.

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EUROPE & THE NEW INDEPENDENT STATES

Europe & the New Independent States - Regional

Supporting the transition to a market economy

USAID's Europe & the New Independent States Bureau's (ENI) is supporting the transition to market economies in Eastern Europe and the NIS through the creation of a new energy efficiency services industry. More than 200 new energy service companies and consultants have grown out of ENI's program. To expand the local experts and consultants professional and business development, ENI has supported the development of 10 local chapters of the U.S. Association of Energy Engineers in the region.

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Regional Networks

Energy restructuring and privatization issues in Central and Eastern Europe and the NIS are being addressed not only by USAID-country specific activities, but also through regional networks that are necessary for the long-term sustainability of energy systems in the region. The activities are designed to expand regional and international energy trade and the integration of energy systems with Western Europe and international energy markets.

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Russia and Ukraine Emissions Trading and Joint Implementation Capacity Building

The U.S. DOE recently launched a \$350,000 effort to facilitate the use of clean energy technologies that could be financed through emissions trading and joint implementation (JI) in Russia and Ukraine. The Pacific Northwest National Laboratory (PNNL) in conjunction with in-country experts are collaborating to develop greater in-country capacity for baseline determinations, monitoring, verification etc.

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Russian Federation

Russia Initiative

USAID's Europe & the New Independent States Bureau's (ENI) is supporting reform of the power sector in Russia through technical assistance and utility partnerships. The focus of the program is on regulatory reform at both the federal and regional level, wholesale market development, and commercialization of regional energies. USAID is also completing a major Energy Commodity Import Program which is financing imports of US technology in the area of environmental controls, district heating system improvement, coal mine health and safety, and renewable energy and power production. In July, ENI held a workshop on Emissions Trading in Russia.

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GAZPROM Working Group

This working group aims to identify and assess project opportunities to reduce methane emissions from Russia's natural gas system through the application of U S technologies. A recent achievement was the first actual measurement of leaks in the GAZPROM pipeline system.

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Promoting Energy Efficiency in Russian Buildings

Development of new draft building codes and energy "passport" system to improve and monitor the use of energy in Russian buildings.

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Environmental Policy and Technology, Russian Air Management Program

RAMP is designed to demonstrate how improved institutions, policies, and practices in air-quality management can help solve air pollution problems in Russian cities RAMP also aims to identify activities that will reduce greenhouse gas emissions

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Integrated Resource Planning

Moscow region (Mosenergo) and the North Caucasus (the Rostov, Krasnodar, and Stavropol energos) Project achievements include the preparation of an investment package that raised up to \$24 million for Mosenergo, and the development of energy regulatory bodies, consumer education about energy efficiency, and preparations for the development of an actual IRP in the North Caucasus

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Center for Energy Efficiency

CENEf has drafted and submitted to Russian energy authorities an alternative energy strategy, and has facilitated contacts between Western business and Russian energy companies Center for Energy Efficiency In 1993, EPA/OIA contributed \$100,000 toward the establishment of the Center for Energy Efficiency (CENEf), headquartered in Moscow CENEf, in its role as an energy "think tank," has been active in promoting the concept of energy efficiency in Russia It has drafted and submitted to Russian energy authorities an alternative energy strategy for Russia, it has promoted demonstrations of energy-saving technologies and techniques, and it has facilitated contacts between Western business and Russian energy companies

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Recovery of Fugitive Methane Emissions

EPA/OAR has worked on projects to recover fugitive methane emissions from Russian gas pipelines (especially the Gazprom system) and coal mines (especially the Kuzbass region in southern Siberia) Activities with gas pipelines have focused on cooperation with the U S private sector and on demonstrations of energy-saving techniques for compressor stations, pipe-welding, etc A recent achievement was the first actual measurement of leaks in the Gazprom pipeline system Activities

involving coalbed methane has resulted in the establishment of a coalbed methane information clearinghouse (to promote investments in methane recovery techniques) and the completion of studies of the methane resources of individual mines

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Russian District Heating Initiative

The U S DOE has supported the Russian Center for Energy Efficiency's (CENEf) and municipal efforts to identify, design, and finance district heating retrofits. In 1997, \$645,000 in efficiency improvements were made, increasing to an estimated \$2.4 million this year, with the bulk of the funds coming from the cities themselves. Honeywell, Inc., is participating in the projects in Chelyabinsk and Kostroma. The World Bank currently is considering a \$200 million district heating loan program to support these projects.

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Russian Wind-Diesel Hybrid Power Systems

The U S DOE has provided technical assistance through NREL to demonstrate the large potential for wind technologies in off grid locations in Russia's Northern Territories. NREL is collaborating with the Intersolar center in Moscow and the Northern regional governments, with financial support from USAID and the Initiative for Proliferation Prevention. Forty wind-diesel hybrid systems were installed in 21 sites in Russia's Northern Territories in 1997-98. The project includes training and monitoring and has the potential to be replicated in locations throughout Northern Russia.

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Russian Energy Efficient Windows Program

DOE has cooperated with U S window manufacturers to disseminate energy efficient window technologies and window rating systems to Russia and other countries with economies in transition. Two workshops were held in Moscow where U S and Russian window manufacturers have developed plans

for joint activities. As a result, the Russian Ministry of Construction (Gosstroj) has issued new, higher energy efficiency requirements for Russian windows.

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Collaboration on Renewable Energy

USDOE and the Russian Ministry of Fuel and Energy launched a joint technical collaboration for renewable energy resources. Several demonstrations have begun including a) small wind turbine and rooftop PV power generators for demonstration projects in Fili Park in Moscow, b) wind/diesel hybrid systems in 21 sites in Russia's Northern Territories, and c) assisted in the start-up operation of a PV panel manufacturing facility in Moscow using U S technology. DOE economic feasibility analysis of a 470kW wood-waste biomass electric power plant led to a World Bank loan of up to \$3 million to build the facility. In addition, The Intersolarcenter in Moscow has been established as a sister organization to NREL for joint R&D activities.

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Ukraine

USAID/ENI Ukraine Program

USAID's Europe & the New Independent States Bureau's (ENI) major emphasis in the Ukraine is in supporting the development of a financially-viable, competitive power market including regulatory development, generation, and distribution company commercialization and privatization and business training.

USAID, in cooperation with USDOE, is financing industrial energy efficiency demonstration projects, municipal energy efficiency activities, ESCO development, investment promotion and IFI loan preparation activities in the Ukraine. The US-Ukrainian Council on Sustainable Development has established an energy efficiency working group that coordinates these activities. ENI is also working on policy and regulatory issues affecting the development and investment in coal bed methane. USAID will be financing a DOE effort to help prepare an acceptable production-sharing law for the Ukrainian government to stimulate foreign investment in oil and gas exploration and production. In addition, USAID is beginning assistance to the National Electricity Regulatory Commission on natural gas tariff and licensing issues and is participating in an Advisory Group, led by World Bank, which is addressing the restructuring of the natural gas sector.

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Ruminant Livestock Methane Reduction Project

Conducted a feasibility assessment to examine improving the diets and productivity of large ruminant animals, in order to reduce methane emissions per unit of meat or milk produced

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Coalbed Methane Center

Reduce emissions of methane from coal mines by identifying and assessing profitable opportunities for coal mines to expand methane recovery in conjunction with coal mining EPA has worked with the Ukrainian government to develop a coalbed methane center and to commercialize coalbed methane in the Donbass Basin

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Industrial Energy Efficiency Financing Project

The U S DOE has supported Ukrainian firms in meeting the competitiveness requirements of economic reforms by improving their energy productivity Six large factories have approved a comprehensive package of recommendations, including installation of 30-45 megawatts of cogeneration capacity in one facility, and a multimillion dollar furnace in another These two facilities will save a combined equivalent of 35-65 MW in capacity or up to \$19 million per year when implemented DOE and PNNL are now helping the plants structure financing for their energy-efficiency projects

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Natural Gas Pipeline Efficiency Project

The governments of Ukraine and the United States agreed in late 1997 to make the modernization and replacement of gas turbine compressor stations a top priority. The U.S. DOE is working closely with the Ukrainian State Committee on Oil and Gas and UkrNaftohaz, the gas transit company, to study the feasibility of this project.

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Private Sector Energy Efficiency Initiative

The DOE is providing technical assistance for the design, development, and financing of energy-efficiency projects. Honeywell, Inc. has implemented a demonstration project in Kiev schools.

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Energy Service Company Support

The U.S. DOE has recently begun working with the European Bank for Reconstruction and Development (EBRD) to define projects for UkrEsco, a newly established Ukrainian ESCO. Bechtel and Econoler will manage UkrEsco and PNNL will provide technical assistance to identify and develop energy efficiency projects with economic returns. EBRD loans to UkrEsco are expected to finance the projects.

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Central Asian Republics

USAID/ENI CAR Program

USAID's Europe & the New Independent States Bureau's (ENI) is providing legal and regulatory assistance related to oil and gas development and transport in Kazakhstan, Turkmenistan, and Uzbekistan. The major emphasis has been on developing internationally acceptable petroleum laws and implementing regulations, including environmental health and safety regulations related to offshore work in the Caspian sea. A parallel effort has focused on the development of institutional and personnel capability within the governments to oversee exploration, production and transportation activities. ENI is also supporting the five CAR countries in their efforts to develop a regional power pool and to implement the Protocol on Parallel Systems Operations. In addition, ENI is providing assistance to Kazakhstan in the development

of its competitive power market and to Kyrgyzstan on regulatory development, tariff reform, privatization, and hydro optimization

ENI is developing a new Caspian Environmental Partnership Program to address environmental aspects of Caspian oil development and transportation through a variety of partnerships linking entities in the US and the CAR. The partnerships focus areas include oil spill response, environmental education, regulation, and information dissemination

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Caucasus

USAID/ENI Caucasus Program

In Georgia, USAID's Europe & the New Independent States Bureau's (ENI) is working on power market development, regulatory reform, investment planning, development of geothermal resources, IFI loan preparation, and privatization of electric distribution and generation companies. USAID is also working on a petroleum law, petroleum sector restructuring, gas restructuring and regulatory development, and pipeline issues. In addition, USAID's program in Georgia also supports the promotion of private sector investment in the establishment of ESCOs and exchange of information through partnerships with US firms.

In Armenia, ENI is focusing on power market development, investment planning on alternatives to the nuclear power plant, regulatory reform, company commercialization and privatization, coal and oil resource assessment, ESCO development and hydro development projects. USAID has also provided natural gas to Armenia as part of a regional program of power restructuring and regulatory reform.

ENI's energy-efficient energy service company development (ESCO) activity in Armenia promotes private sector investment in the establishment of ESCOs and exchange of information through partnerships with US firms. ENI has supported the development of a local chapter of the US Association of Energy Engineers.

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Bulgaria

Bulgarian Energy Efficiency Demonstration Zone

DOE has worked closely with the Bulgarian Foundation for Energy Efficiency (EnEffect) to develop a plan for an energy efficiency \$8 million demonstration zone that has received funding from the Global Environment Facility (GEF). The project combines the retrofit of a school, hospital, high-rise multi-family building, industrial plant, district heating system, and street lighting with training, monitoring,

evaluation and other capacity building activities. It is seen as a model for similar projects being considered in other countries in Central and Eastern Europe. DOE also provided technical assistance to Bulgaria when created EnEffect as a non-government organization to promote energy efficiency.

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Moldova

Power Sector Restructuring and Privatization in Moldova

USAID's Europe & the New Independent States Bureau's (ENI) is assisting in the restructuring and privatization of the Moldova power system in cooperation with the World Bank.

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Baltics

USAID/ENI Baltics Program

USAID's Europe & the New Independent States Bureau's (ENI) is supporting a regional effort to prepare a least-cost investment plan for the Baltic region and develop a regional power pool/Independent System Operator (ISO). USAID is helping to develop the capabilities of the new energy regulatory agencies in Lithuania and Latvia. In addition, USAID has developed DSM capabilities and helped utilities in Latvia and Lithuania open "Energy Centers" and implement demonstration projects. The work with the Baltic States supports the U.S. Northeast Europe Initiative (NEI) and links with USAID work in Northwest Russia with the Finns and EBRD on a power investment program for Northwest Russia.

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CENTREL

USAID/ENI CENTREL Program

USAID's Europe & the New Independent States Bureau's (ENI) is supporting the development of the new Polish Energy Regulatory Office and developing DSM programs with the distribution companies in Gliwice and Torun, focusing on international customers. USAID is also supporting the CENTREL countries in a regional program covering transmission planning and power pool, operation, environmental coordination, and regulatory aspects of power and interconnection agreements. Poland is a key country in USAID's Global Climate Change Strategy and ENI is considering possible activities involving the new

DCA for loan guarantees In addition, USAID is implementing several energy efficiency demonstration projects involving performance contracting with municipalities in Poland and Hungary and helping the Slovak government on phasing out heating tariff subsidies

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Coalbed Methane Projects

Two U S agencies, in cooperation with the Polish Ministry of Environmental Protection, are jointly funding a \$1 1 million project to demonstrate a new technology to use methane from coal mines as fuel for a brine-water treatment facility EPA has conducted assessments of coalbed methane resources in Poland, provided information to government officials on the environmental, economic, and mine safety benefits of

recovering coalbed methane, and has provided information for investors interested in developing this energy resource

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Southern Tier

USAID/ENI Southern Tier Program

USAID's Europe & the New Independent States Bureau's (ENI) helped develop an electricity law and power restructuring plan for Romania which the government is expected to approve soon ENI is working closely with a World Bank/EBRD/IMF team on an overall approach to reform of the power sector in Bulgaria In addition, USAID is supporting ESCO development and municipal energy efficiency programs in Romania and Bulgaria, including a new municipal energy financing initiative is beginning within the Southeast Europe Cooperative Initiative framework USAID is supporting the government of Macedonia in developing an energy tariff methodology and National Energy Strategy

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LATIN AMERICA REGION

Latin America- Regional

Latin American Initiative for Environmental Technology

USAID's Global Environment Center is supporting this initiative which is working to increase private-sector investment in the development of environmentally sustainable energy services in the countries of the developing world

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Regional Renewable Energy Planning Model

NREL is collaborating with NRECA-South America to develop computer-based analytic tools which allow for renewable energy systems to be considered where only conventional grid extension or diesel generators would have been considered before. Specifically, the model will make comparisons between a) individual renewable energy systems, b) isolated mini-grids (diesel or hybrid-renewable), and c) traditional central grid extensions for particular villages, and identify the conditions under which each option is preferred.

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Renewable Energy for Chile and Argentina

U S DOE is demonstrating renewable-energy technologies, project models and financial tools for delivery of clean power in remote areas.

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International Motor Challenge Program Latin America

The U S Department of Energy's Office of Energy Efficiency and Renewable Energy is partnering with developing countries to build on the U S experience and implement country specific programs to help local manufacturers reduce energy costs and increase productivity through improved industrial motor systems. Latin America efficiency opportunities are primarily focused on five countries: Brazil, Mexico, Argentina, Chile and Venezuela. Initial assessments indicate \$15 million in annual energy cost savings could be achieved with the modest goal of reducing the Chilean motor system energy use by one percent.

It is expected that successful results in Chile would lead to further replication in other Latin American countries

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Argentina

Modeling National Economic Impacts of Climate Change Policy

This joint effort with national experts in economic modeling and environmental policy will develop improved capacity for analysis of costs and other economic impacts of policies to limit greenhouse gas emissions, including analysis of the economic effects of flexibility mechanisms

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Brazil

Modeling National Economic Impacts of Climate Change Policy

This joint effort with national experts in economic modeling and environmental policy will develop improved capacity for analysis of costs and other economic impacts of policies to limit greenhouse gas emissions, including analysis of the economic effects of flexibility mechanisms

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Landfill Methane Feasibility Study Project

EPA and Brazilian officials performed a feasibility study to examine opportunities for methane recovery projects. Project proposals have been developed and efforts are underway to facilitate private sector partnerships.

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Integrated Environmental Management Project

USAID/Brazil's project focuses on collaboration with the new Brazilian energy regulatory agency, ANEEL, to assure private sector access for clean energy technologies to meet Brazil's growing energy needs. The program will also further define planned World Bank loans in energy.

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Renewable Energy Technology Cooperation

The U.S. DOE is collaborating with the Department of Minerals and Energy and providing technical support to design and implement renewable energy technology programs including Technology areas include photovoltaic (PV) systems, PV/wind water pumping systems, home PV systems, and village scale hybrid PV replacement for diesel.

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Chile

Modeling National Economic Impacts of Climate Change Policy

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Costa Rica

Ruminant Livestock Methane Assessment

EPA is involved in training with Costa Rican scientists regarding ruminant methane emission measurement techniques.

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Mexico

Mexico Environmental Management Project

The USAID/Mexico program has strengthened Mexican electric sector institutions (FIDE and CONAE), leading to the design and implementation of a five-year national-scale incentives/rebates program, and elevated Mexico to a regional EE leadership position

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Power Wheeling/Mexico

USAID's Global Environment Center and the USAID/Mexico are working together to support a major investigation of the legal, regulatory, and environmental factors affecting cross-border trade in electricity between the U S and Mexico. Since cross-border trading between the two countries could optimize the power generation mix, GHG reductions would be achieved as a result.

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Transportation & Electric Vehicles

USAID/Mexico and USAID's Global Environment Center are sponsoring activities designed to leverage public and private investments in electric vehicles. A prime objective of the program is to reduce particulate matter and lead in the urban environment.

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Reduction of Power Station Emissions in Mexico

USAID/Mexico and USAID's Global Environment Center are collaborating with EPRI to accelerate technology transfer of environmental control technologies to CFE. The program aims to promote the implementation of energy efficiency technologies and introduce low carbon-emitting energy systems through the private sector and public/private partnerships.

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Modeling National Economic Impacts of Climate Change Policy

This joint effort with national experts in economic modeling and environmental policy will develop improved capacity for analysis of costs and other economic impacts of policies to limit greenhouse gas emissions, including analysis of the economic effects of flexibility mechanisms

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Fuel-Cell Buses

Demonstrates the use of zero emissions buses in Mexico City, and tram operators and potential buyers on fuel cell technology

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Energy Efficiency Voluntary Program

Training and cooperation with CONAE regarding voluntary program development and energy efficiency building programs

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Ruminant Livestock Methane Assessment

EPA is involved in training with Mexican scientists regarding ruminant methane emission measurement techniques

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Landfill Methane Assessment Project

EPA performed feasibility testing and is currently working with Mexican officials towards the development of a demonstration project of effective landfill methane recovery methods

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Renewable Energy Technology Cooperation

The U S DOE is collaborating with the Department of Minerals and Energy and providing technical support to design and implement renewable energy technology programs including Technology areas include solar thermal technology outreach, energy-efficient water works, monitoring of wind/hybrid village power projects (installed with AID funding), grid and off-grid PV and wind technology projects, and geothermal electric power generation

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Border Energy Forum

The U S and Mexican Departments of Energy launched the Border Energy Forum together to address the vital issues of energy and the environment affecting the rapidly developing region of northern Mexico and the southwestern United States. A broad spectrum of leaders from industry, government, educational institutions and environmental organizations from both nations convene each year to develop mutually beneficial strategies for addressing these issues.

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Uruguay

Ruminant Livestock Program

EPA is involved in training with Uruguayan scientists regarding ruminant methane emission measurement techniques

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INDEX

	Page
<u>MULTI-REGION PROJECTS</u>	
Energy Efficiency Development (USAID)	1
Energy Efficiency Harmonization, Distribution, and Promotion (USAID)	1
Energy Efficiency Standards, Economics, and Policy Program (USAID)	1
Energy IQC (USAID)	1
Environmental Management Systems (EMS) Task Order (USAID)	2
International Cleaner Production Cooperative (EPA)	2
International Co-Control Analysis Project Estimating the Environmental Benefits of Greenhouse Gas Reduction (EPA)	2
International Council for Local Environmental Initiatives (USAID)	3
International Industrial Efficiency Assessment (DOE)	3
International Motor Challenge Program (DOE)	3
No Regrets Case Studies (EPA)	4
North-South Dialog on Climate Change Good Practices, Technology Innovation (EPA)	4
Peer Exchanges (USAID)	5
Renewable Energy Applications and Training (USAID)	5
Renewable Energy Applications and Training (USAID)	5
Rural Electrification Services (USAID)	6
Staff Assistance to World Bank (DOE)	6
Strategic Planning on GCC, Renewables and Energy Efficiency (USAID)	6
Sustainable Urban Management IQC (USAID)	6
Technology Cooperation Agreement Pilot Project (USAID)	7
U S Climate Studies Program (CSP)	7
Utility Partnerships (USAID)	8
<u>AFRICAN REGION-East Africa</u>	
Livestock Nutrition and Methane Reduction Project (EPA)	8
<u>Egypt</u>	
Power Sector Support Project (USAID)	8
Egyptian Environmental Policy Project (USAID)	9
Cairo Air Improvement Project (USAID)	9
Climate Change Workshop (EPA)	9
<u>Ghana</u>	
Industrial Efficiency Assessments Cooperation with Ghana (DOE)	9
Technical Support for Energy Services Companies (DOE)	10
Cooperation with the Energy Foundation to provide technical support and potential workshop training on energy efficiency and climate technology opportunities (EPA)	10
<u>South Africa</u>	
Energy Efficiency in South Africa (EPA)	10
Energy Efficiency Housing in South Africa (USAID)	11
South Africa Electricity Policy Project (DOE)	11
Energy Efficiency Policy and Program Cooperation (DOE)	11
Renewable Energy Technology Cooperation (DOE)	11

ASIA-PACIFIC REGION

Asia-Regional

USAEP Technical Representatives (USAID)	12
USAEP Environmental Technology Fund II (NASDA)	12
USAEP NGO Business Partnerships (USAID)	12
USAEP Environmental Exchange Program (EEP) (USAID)	12
USAEP Improved Environmental Management in Asia (USAID)	12
USAEP Promotion of Pollution Prevention and Clean Technology Concepts (P2/CT), Technology and Equipment, and Education in Asia (USAID)	13
USAEP Environmental Professional Association Development (USAID)	13
USAEP State Environmental Initiative (USAID)	13
Asia Pacific Initiative for Renewable Energy and Energy Efficiency (EPA)	13

Bangladesh

Ruminant Livestock Methane (EPA)	14
----------------------------------	----

China

Modeling National Economic Impacts of Climate Change Policy (EPA)	14
Coalbed Methane (EPA)	14
Integrated Gasification Combined Cycle (IGCC) Power Generation to Achieve Emissions Reduction (EPA)	14
US-China Energy and Environment Technology Center (EPA)	15
China Energy-Efficient, CFC-Free Refrigerator Project (EPA)	15
Technical Assistance for Energy-Efficient Lighting in China (EPA)	15
Technical Assistance to Improve Efficiency of Air Conditioners in China (EPA)	15
Halon Phaseout Program (EPA)	16
Energy-Efficient Building Demonstration in Hong Kong (EPA)	16
Wind Energy Assessment (EPA)	16
Landfill Methane Program (EPA)	16
Mobile Sources (EPA)	17
Nationwide Air Quality Monitoring Network (EPA)	17
Technology Seed grant to National Assoc of State Development Agencies (EPA)	17
Transfer of Voluntary Programs (EPA)	17
Small PV/Wind Technology Applications for Rural and Remote Development in China (DOE)	17
Energy Efficient Office Building Demonstration Project in China (DOE)	18
China Biomass Collaboration (DOE)	18
Energy-Efficient Industrial Motors Systems in China (DOE)	18
Electric Vehicle Technology Development (DOE)	19

India

Dairy Nutrition Improvement and Methane Reduction Program (EPA)	19
Coalbed Methane Demonstration Project (EPA)	19
Ruminant Livestock Methane (EPA)	20
Ramakrishna Mission Economic PV Development Initiative (DOE)	20

Indonesia

Forestry and Terrestrial Protected Areas (USAID)	20
Coordinated Local Environmental Action Networks (CLEAN) Energy Project (USAID)	20
Windpower for Islands and Nongovernmental Development (WIND Project) (USAID)	20
Wind-diesel retrofits in Indonesia (DOE)	20

Republic of Korea

GHG Reduction Program (EPA)	21
-----------------------------	----

Modeling National Economic Impacts of Climate Change Policy (EPA)	22
<u>Nepal</u>	
Dairy Nutrition Improvement and Methane Reduction Program (EPA)	22
Ruminant Livestock Methane (EPA)	22
Forestry/Biodiversity Conservation (USAID)	22
Private Hydropower Development (USAID)	23
<u>Philippines</u>	
Support Developing Country Constituencies for Climate Mitigation (EPA)	23
Voluntary Program Pilot Project (EPA)	23
Energy Efficiency Malls Program (EPA)	23
Philippines Climate Change Mitigating Program (USAID)	23
Green Malls Project (USAID)	24
Environmental Peer Exchanges (USAID)	24
Clean Coal Technology PASA (USAID)	24
<u>Thailand</u>	
Landfill Methane Feasibility Study Project (EPA)	25
EUROPE AND THE NEW INDEPENDENT STATES	
<u>Europe & the New Independent States-Regional</u>	
Supporting the transition to a market economy (USAID)	25
Regional Networks (USAID)	25
Russia and Ukraine Emissions Trading and Joint Implementation Capacity Building (DOE)	25
<u>Russian Federation</u>	
Russia Initiative (USAID)	26
GAZPROM Working Group (EPA)	26
Promoting Energy Efficiency in Russian Buildings (EPA)	26
Environmental Policy and Technology, Russian Air Management Program (EPA)	27
Integrated Resource Planning (EPA)	27
Center for Energy Efficiency (EPA)	27
Recovery of Fugitive Methane Emissions (EPA)	27
Russian District Heating Initiative (DOE)	28
Russian Wind-Diesel Hybrid Power Systems (DOE)	28
Russian Energy Efficient Windows Program (DOE)	28
Collaboration on Renewable Energy (DOE)	29
<u>Ukraine</u>	
USAID/NI Ukraine Program (USAID)	29
Ruminant Livestock Methane Reduction Project (EPA)	30
Coalbed Methane Center (EPA)	30
Industrial Energy Efficiency Financing Project (DOE)	30
Natural Gas Pipeline Efficiency Project (DOE)	31
Private Sector Energy Efficiency Initiative (DOE)	31
Energy Service Company Support (DOE)	31
<u>Central Asian Republics</u>	
USAID/ENI CAR Program (USAID)	31
<u>Caucasus</u>	
USAID/ENI Caucasus Program (USAID)	32
<u>Bulgaria</u>	
Bulgarian Energy Efficiency Demonstration Zone (DOE)	32

<u>Moldova</u>	
Power Sector Restructuring and Privatization in Moldova (USAID)	33
<u>Baltics</u>	
USAID/ENI Baltics Program (USAID)	33
<u>CENTREL</u>	
USAID/ENI CENTREL Program (USAID)	33
Coalbed Methane Projects (EPA)	33
<u>Southern Tier</u>	
USAID/ENI Southern Tier Program (USAID)	34
<u>LATIN AMERICA REGION</u>	
<u>Latin America-Regional</u>	
Latin American Initiative for Environmental Technology (USAID)	35
Regional Renewable Energy Planning Model (DOE)	35
Renewable Energy for Chile and Argentina (DOE)	35
International Motor Challenge Program Latin America (DOE)	35
<u>Argentina</u>	
Modeling National Economics Impacts of Climate Change Policy (EPA)	36
<u>Brazil</u>	
Modeling National Economic Impacts of Climate Change Policy (EPA)	36
Landfill Methane Feasibility Study Project (EPA)	36
Integrated Environmental Management Project (USAID)	37
Renewable Energy Technology Cooperation (DOE)	37
<u>Chile</u>	
Modeling National Economic Impacts of Climate Change Policy(EPA)	37
<u>Costa Rica</u>	
Ruminant Livestock Methane Assessment (EPA)	37
<u>Mexico</u>	
Mexico Environmental Management Project (USAID)	38
Power Wheeling/Mexico (USAID)	38
Transportation & Electric Vehicle (USAID)	38
Reduction of Power Station Emissions in Mexico (USAID)	38
Modeling National Economic Impacts of Climate Change Policy (EPA)	39
Fuel-Cell Buses (EPA)	39
Energy Efficiency Voluntary Program (EPA)	39
Ruminant Livestock Methane Assessment (EPA)	39
Landfill Methane Assessment Project (EPA)	39
Renewable Energy Technology Cooperation (DOE)	40
Border Energy Forum (DOE)	40
<u>Uruguay</u>	
Ruminant Livestock Program (EPA)	40