

# INVENTORY OF ENVIRONMENTAL WORK IN CHINA

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In this fifth issue of the *China Environment Series*, the Inventory of Environmental Work in China has been updated and we made extra effort to add many new groups, especially in the Chinese organization section. To better highlight the growing number of U.S. universities and professional associations active in China we have created a separate section. In the past inventories we have gathered information from U.S. government agencies; from this year forward we will be inventorying the work done by other governments as well.

This inventory aims to paint a clearer picture of the patterns of aid and investment in environmental protection and energy-efficiency projects in the People's Republic of China. We highlight a total of 118 organizations and agencies in this inventory and provide information on 359 projects. The five categories of the inventory are listed below:

- Part I (p. 138): United States Government Activities (15 agencies/organizations, 103 projects)
- Part II (p. 163): U.S. and International NGO Activities (33 organizations, 91 projects)
- Part III (p. 190): U.S. Universities and Professional Association Activities (9 institutions, 27 projects)
- Part IV (p. 196): Chinese and Hong Kong NGO and GONGO Activities (50 organizations, 61 projects)
- Part V (p. 212): Bilateral Government Activities (11 agencies/organizations, 77 projects)

Since we have expanded the inventory, even *more* people than last year contributed to the creation of this inventory. We are grateful to all of those in U.S. government agencies, international and Chinese nongovernmental organizations, universities, as well as representatives in foreign embassies who generously gave their time to compile and summarize the information their organizations and agencies undertake in China. Timothy Hildebrandt, Wu Fengshi, and Sun Liang at the Woodrow Wilson Center deserve praise for devoting countless hours to compiling, formatting, and proofreading this seemingly endless stream of information. While doing his dissertation fieldwork in China, Eric Zusman provided considerable help by contacting dozens of foreign embassies in Beijing and requesting project information for this inventory. We have made every attempt to verify that the projects inventoried are actually taking place or soon will begin. Any updates, corrections, or inquiries regarding the inventory should be directed to Jennifer L. Turner (Editor) at [chinaenv@erols.com](mailto:chinaenv@erols.com). This inventory also can be viewed on the Environmental Change and Security Project Web site: <http://ecsp.si.edu>.

## GLOSSARY

ADB	Asian Development Bank
DoE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
GEF	Global Environment Facility
GHG	Greenhouse Gases
LBNL	Lawrence Berkeley National Laboratory (United States)
MoA	Ministry of Agriculture (China)
MoF	Ministry of Finance (China)
MOST	Ministry of Science and Technology (China)
NREL	National Renewable Energy Laboratory (United States)
SDPC	State Development and Planning Commission (China)
SEPA	State Environmental Protection Administration (China)
SETC	State Economic Trade Commission (China)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

*Editor's Note: Unless otherwise noted, all currency noted in the inventory is in U.S. dollars*

## PART I. U.S. GOVERNMENT ENVIRONMENTAL AND ENERGY ACTIVITIES

**BATTELLE-ADVANCED INTERNATIONAL STUDIES UNIT (AISU)**<http://www.pnl.gov/china><http://www.pnl.gov/aisu><http://www.battelle.org>**Beijing Energy Efficiency Center (BECon)****Focus:** Energy Efficiency Research**Partners:** Energy Research Institute, Lawrence Berkeley National Laboratory, Environmental Protection Agency (EPA), World Wildlife Fund, Department of Energy**Schedule:** Initiated 1993, Ongoing

BECon was established in 1993 in cooperation with three organizations—Battelle, Lawrence Berkeley National Laboratory, and the World Wildlife Fund. Today, BECon has a fulltime staff of 12 professionals and many consultants. BECon is leading high-level market-driven projects for the World Bank and United Nations Development Programme, and has contributed to many influential policy recommendations to the Chinese government.

**Chinese Environmental Project Finance Competition****Focus:** Environmental Finance Development**Partners:** Patricia Chernoff Charitable Trust, University of Maryland, Chinese universities, research institutes, and private companies**Funding:** Patricia Chernoff Charitable Trust**Schedule:** Initiated 2001, Targeted Completion October 2002

The Battelle Memorial Institute has received funding from the Patricia Chernoff Charitable Trust to sponsor a series of Chinese scholars and entrepreneurs to develop projects to help solve energy and environmental problems in China. Funding will be awarded through a competitive process to support up to three months of work with Battelle's Advanced International Studies Unit (AISU) to develop project plans and to organize financing to reduce pollution related to energy consumption. AISU and its partner, the University of Maryland, will provide *ad hoc* training and logistical support to enable the winning applicants to develop their project ideas. Competition winners will be highly motivated, young individuals whose work would likely combine efforts to improve energy efficiency, reduce local pollution levels, and catalyze market reforms.

**Economic and Environmental Modeling****Focus:** Energy Research**Partners:** Beijing Energy Efficiency Center, Energy Research Institute, Chinese Academy of Social Sciences, Development Research Center of the State Council, Qinghua University**Funding:** Environmental Protection Agency (EPA)**Schedule:** Ongoing

Economic, energy, and environmental modeling will become increasingly important in China as market reforms continue to reshape the economy. Policymakers will need realistic models to explore energy and climate change policy options and to minimize total development expenditures. The EPA is supporting a series of modeling workshops to share information on computable general equilibrium, optimization, and hybrid models in order to: (1) analyze potential scenarios aimed at reducing climate change and pollution mitigation costs; and (2) build a community of Chinese and international modelers.

**Expanding Natural Gas Utilization in China****Focus:** Energy Policy**Partners:** EPA, Chinese State Development Planning Commission (SDPC), University of Petroleum-Beijing**Schedule:** Initiated 1999, Completed April 2002

Natural gas has many advantages over coal, yet historically natural gas has played a minor role in China's energy sector. Chinese policymakers are developing a renewed interest in natural gas as a way to fuel growth without the environmental and health impacts of coal combustion. To boost natural gas availability, a number of barriers must be removed to make it more competitive. This study—one of the ten agreements reached in 1999 between then-EPA Administrator Carol Browner and her Chinese counterparts—is now complete, and will be published in full in summer 2002.

## **BUREAU OF RECLAMATION (DEPARTMENT OF INTERIOR)**

<http://www.usbr.gov>

<http://www.doi.gov>

### **Memorandum of Understanding: Water**

**Focus:** Water Management

**Partners:** Chinese Ministry of Water Resources

The Bureau of Reclamation (BoR) and the Chinese Ministry of Water Resources (MWR) have a two-pronged Memorandum of Understanding (MOU): (1) the exchange of ideas, information, skills, and techniques on water resources management and conservation; and (2) the exchange of information and technology for preserving and enhancing the environment. Under Annex I of the MOU, BoR helped facilitate U.S. irrigation equipment manufacturers (through the Irrigation Association) to set up three demonstration projects around the city of Zhaoyuan in Shandong Province. The object of the demonstration program was to compare the effectiveness and water savings of different types of irrigation equipment. A three-year demonstration program was begun after equipment installation was completed in spring 1997. Under Annex II of the MOU, BoR and MWR established a cooperative training program with the following objectives: (1) to further cooperative relations between the two organizations; (2) to promote exchange of technical personnel and ideas between the two countries; and (3) to train administrative and technical personnel in all aspects of water resources management. In September 2000, BoR and MWR signed an amendment to the MOU that extended it through 15 December 2005.

## **DEPARTMENT OF AGRICULTURE/FOREIGN AGRICULTURE SERVICE/INTERNATIONAL COOPERATION AND DEVELOPMENT (USDA/FAS/ICD)**

<http://www.usda.gov>

### **China Water Quality Monitoring, Wastewater Re-use, Watershed Management**

**Focus:** Water Management, Agricultural Research

**Partners:** EPA, Chinese State Environmental Protection Administration (SEPA), China Environmental Protection Foundation (CEPF), China's Ministry of Water Resources (MWR), Shandong and Henan Provincial Environmental Protection Bureaus (EPBs)

**Funding:** USDA, EPA, CEPF, MWR

**Schedule:** Initiated 2000, Ongoing

After the successful implementation of the drinking water demonstration projects under the Shandong Watershed Monitoring Project (1996-1999), CEPF, USDA, and EPA proposed further cooperative efforts through research involving various aspects of watershed management focused on real-time data collection and systems management. The proposed research is comprised of two initiatives: (1) pilot demonstration of a wastewater re-use package plant; and (2) development of a surface water monitoring station. Project sites are located at various points along the Yellow River. One site was installed in Henan Province (November 2001) and one in Shandong Province (April 2002).

### **Consortium of U.S. and Chinese Agricultural Universities**

**Focus:** Agricultural Education, Natural Resource Management

**Partners:** IDEALS; U.S. universities (Cornell, Maryland, University of California, Ohio State, Texas A&M, Michigan State, Penn State, University of Wisconsin, North Carolina State); Chinese agricultural (Ag.) universities (Northwestern Science and Tech University of Ag. & Forestry, Zhejiang University, China Ag. University, and Nanjing, Huazhong, Southwest, South China, and Shenyang Ag. Universities); Chinese Academy of Agricultural Science

The consortium of U.S. and Chinese agricultural universities promotes the advancement of agriculture in both countries. Objectives of the consortium include: (1) creating specific ways to develop collaborative research, education and outreach projects; and (2) creating opportunities that involve cooperation among partners to address practical needs of agriculture where there is an expectation for making a difference; and (3) building a network for empowering significant personnel exchanges. These objectives shall be reached through training courses; (sabbatical leaves; short-term visits; seminars/workshops; summer institutes for undergraduate students in both countries; a possible joint Ag. MBA program; initiating input into agricultural education reform in China; and research, education and outreach centers. In 2002, the consortium will present a WTO technical seminar (summer) and a natural resource seminar (fall).

**Ministry of Water Resources Exchange Program****Focus:** Water Research, Agricultural Research**Funding:** USDA/FAS/ICD, Chinese Ministry of Water Resources**Schedule:** Targeted Initiation 2003

The USDA's Foreign Agriculture Service and the Chinese Ministry of Water Resources are in the process of establishing an agreement on scientific collaboration, including short-term scientific exchange visits and technical symposia. This scientific collaboration will provide agricultural and water officials, scientists, and technical experts from both China and the United States with the opportunity to establish contacts with counterpart officials, research laboratories, and institutions, and to develop and implement projects of mutual scientific interest. Selected activities for cooperation may include, but are not limited to: (1) short-term technical scientific exchange visits; (2) long-term project collaboration; and (3) technical symposia. The working agreement will be signed July 2002.

**Oregon Seeds Project****Focus:** Conservation Management, Agricultural Research**Partners:** Oregon Seed Council, Oregon Department of Agriculture, Oregon State University, USDA/Agricultural Research Service (ARS)**Schedule:** Initiated February 2001, Ongoing

This project both addresses issues of grassland degradation in China that have accelerated erosion and caused serious air pollution and promotes the opening of a new market for U.S. grass seed. A conference is proposed for fall 2002 to exchange information relating to availability of suitable germplasm and technology for grassland restoration. U.S. and Chinese specialists will: (1) address a plan to reverse the degradation of grasslands in the low rainfall regions of northern and western China; (2) discuss methods for restoring grasslands; and (3) develop a cooperative plan of action for implementing this technology in appropriate areas. The program will involve the U.S. seed supply sector to address issues that have limited the progress of Chinese grassland conservation programs in the past. Following an exchange of information, the conference will approve a program to demonstrate the effectiveness of U.S. germplasm in appropriate grassland management systems and provide an introduction for U.S. seed companies to the Chinese market for dry-land grass species.

**U.S.-China Agro-Environmental Center of Excellence****Focus:** Natural Resource Management, Agricultural Management**Partners:** Johns Hopkins, USDA/CSREES, U.S. Composting Council, Ministry of Agriculture (MoA), Chinese Academy of Agricultural Sciences (CAAS), Livestock Waste Management Center (Pingtung, Taiwan)**Funding:** USDA/Foreign Agricultural Service, Chinese Academy of Agricultural Science**Schedule:** Initiated 2000, Ongoing

Following a series of five technical exchange visits by U.S. experts to China, the establishment of a compost demonstration site at CAAS (July 2001), and the presentation of an Agro-Environmental Seminar in Beijing (November 2001), FAS/ICD and CAAS proposed to further Sino-U.S. agricultural cooperative efforts through the establishment of an Agro-Environmental Center of Excellence that will serve as a catalyst for research and discussion on the issues of environmental problems in agriculture. The center will aim to: (1) coordinate the efforts of American and Chinese experts, academics and others in the development of cleaner production practices; (2) the coordination of field research, demonstration projects, and policy recommendations; and (3) the stimulation of trade opportunities for U.S. trade associations and U.S. companies.

**DEPARTMENT OF AGRICULTURE/FOREST SERVICE**<http://www.fs.fed.us/global>**Building Policy and Economic Analysis Capacity****Focus:** Agricultural Economics Research**Partners:** Chinese Academy of Sciences, Center for Chinese Agricultural Policy, Chinese State Forestry Administration (SFA)**Funding:** \$10,000 (1999-2001 USDA support)**Schedule:** Initiated 1999, Ongoing

The USDA Forest Service is working with its Chinese partners on a project that helps their staff and others in China perform sound agricultural economics policy analysis that can be used by decision-makers. As part of this effort, the USDA Forestry Service is supporting topic specific seminars and case studies. For more information on this and most other USDA Forest Service projects contact Gary Man (202) 273-4740.

## **Carbon Storage and Accumulation in Forests of China**

**Focus:** Forestry Research, Climate Research

China and Russia make up most of the Eurasian landmass yet little is known about the carbon budget, especially in China. The Forest Service has initiated a project that aims to estimate the total carbon stored in China's forests. The project is in the preliminary stages of identifying appropriate collaborators. The intent is to apply the methods used in previous U.S. and Russia forest carbon studies in order to estimate carbon storage in China's forests.

## **Code of Forest Harvesting Practices**

**Focus:** Forestry Management

**Partners:** Chinese State Forestry Administration

**Funding:** International Labor Organization, UN Food and Agriculture Organization, USDA Forest Service

**Schedule:** Ongoing

The Chinese State Forestry Administration, with some support from the USDA Forest Service, has a project to develop and test codes of forest harvesting practices that can help lead to improved forest management in China. The International Labor Organization in cooperation with the Food and Agriculture Organization provided funding for the initial development phase. The USDA Forest Service provided harvesting specialists to comment on the draft codes of practice and some funding (\$10,000) in the development phase and plans to continue to provide technical assistance. The State Forestry Administration is currently seeking support to further test and demonstrate their forestry codes of practice.

## **GIS-Based Soil Erosion and Sediment Transport Model**

**Focus:** Water Research

**Partners:** Beijing Forestry University

**Funding:** \$30,000 (2000-2001 USDA Forest Service support)

**Schedule:** Initiated 2000, Targeted Completion 2003

Using data collected from the Quxi watershed in the Yangze River Basin in southern China, the project partners aim to validate a newly developed geographic information system based on a soil erosion and transport model. The data for the model has been collected and is currently in the validation stages. For more information on this project contact Steve McNulty (919) 515-9489.

## **Invasive Pests Collaboration**

**Focus:** Pest Research

**Partners:** Chinese State Forestry Administration

**Schedule:** Initiated 1998, Ongoing

The USDA Forest Service and Chinese State Forestry Administration are collaborating on threatening pests. Examples of collaborative efforts include: (1) providing information on specific pests; (2) hosting information gathering trips; and (3) working together on solutions that control invasive species from each other's country. Some form of collaboration has occurred on the red turpentine beetle (*Dendroctonus valens*), pine mealybug (*Oracella acuta*), and the hemlock woolly adelgid (*Adelges*). The first two pests are introductions from the United States to China and the third from China to the United States.

## **Invasive Species—Asian Long-Horned Beetle**

**Focus:** Pest Research

**Partners:** USDA Animal and Plant Health Inspection Service, Chinese Academy of Forestry, Chinese State Forestry Administration, Chinese Academy of Sciences, Beijing Forestry University

**Funding:** \$458,000 (1998-2001 USDA Forest Service support)

**Schedule:** Ongoing

This project is part of a larger effort to eradicate the Asian long-horned beetle (ALHB) in the United States. Specifically, this set of activities includes: (1) working on a trap and survey design for ALHB; (2) evaluating insecticides and application methods for suppressing adult and larval stages; and (3) developing a bibliography and information database of ALHB and its close relatives. To date, work has isolated pheromones and kairomones for potential trap attractants, and evaluated three insecticide application methods. The chemical control results are now being applied in the United States. Future work is expected to continue for a number of years. An ALHB conference in China is planned to take place in spring 2002 to help facilitate information sharing and collaboration that results in the eradication and control of this damaging pest in both countries.

## **Kudzu Biocontrol**

**Focus:** Plant Research

**Funding:** \$150,000 (1999-2001 USDA Forest Service support)

**Schedule:** Initiated 1999, Ongoing

A set of activities are being implemented to search for effective biological control vectors that reduce the impact of Kudzu in the southern portion of the United States. Currently the project is in its third year of screening potential control agents. A number of stem and root-boring beetles stem feeding weevils and three defoliators and a fungal disease were tested in 2001 but did not pass the host preference tests. The Chinese and U.S. researchers will search for potential natural enemies in 2002.

### **Mile-a-Minute Weed Control**

**Focus:** Plant Research

**Partners:** Sino-American Lab

**Funding:** \$445,000 (1997-2002 USDA Forest Service support)

**Schedule:** Initiated 1997, Targeted Completion 2004

Under this cooperative project, which has the full title: "Determining the Potential for Using Natural Enemies Found in China to Control Mile-a-Minute in the United States" Chinese and U.S. partners are: (1) conducting surveys for natural enemies; (2) establishing colonies of promising natural enemies; and (3) conducting host range tests in China. Based upon initial host testing, potential natural enemies will be further tested in the United States.

### **Nature Based Tourism Workshop and Manual**

**Focus:** Conservation Management

**Partners:** Sichuan Forestry Department, Conservation International, World Wildlife Fund-China

**Funding:** \$35,000 (2000-2002 USDA Forest Service support)

**Schedule:** Initiated 2000, Targeted Completion 2002

A workshop was held in Sichuan in fall of 2000 to discuss the components of nature-based tourism, specifically ecotourism. The workshop served as an opportunity for park and reserve managers to share experiences and develop a group to address issues of mutual interest. A general users manual to assist managers in developing nature-based tourism enterprises is currently being developed. The manual is tentatively scheduled for completion in spring 2002. In a related project, USDA Forest Service together with the Forestry Bureau in Zhongdian Prefecture, Yunnan Province developed a bilingual brochure that highlights the natural features of the area and incorporates an environment ethic to "tread lightly" and "leave no trace." The brochure was published in 2001.

### **Restoration/Forest Health**

**Focus:** Forestry Management

**Partners:** Chinese State Forestry Administration, Memphis Zoo

**Schedule:** Initiated 2001, Ongoing

The State Forestry Administration in collaboration with the USDA Forest Service, the Memphis Zoo and others are beginning a project that will look at various strategies and practices that can be implemented to facilitate and restore healthy forests. The approach is to start with three demonstration areas with different conditions and needs. Primarily working at the village or farmer level, the project will explore various treatments to move demonstration areas toward a more healthy state while having a strong consideration for the needs and livelihoods of the local villagers and farmers. Assuming the demonstrations are successful, the Chinese State Forestry Administration intends to expand this process in to other areas in China. As a part of the project, a national level workshop will be held toward the end of 2002 to share the concept of the project, progress of the demonstration areas, and broader strategies for approaching healthy forests through restoration and other management practices.

### **Use of Remote Sensing Technologies to Monitor Fires**

**Focus:** Forestry Management

**Partners:** Chinese Academy of Forestry

**Funding:** \$40,000 (2000 USDA Forest Service support)

**Schedule:** Ongoing

The Chinese Academy of Forestry and the USDA Forest Service are collaborating to test remote sensing technologies that can help in the efficient monitoring of wildfires. Initial exchange visits have occurred and specific joint activities are now underway. Data collection has been completed for a study to measure and model the distribution of particulate matter from fires and other sources. Another activity validating imagery from Moderate Resolution Imaging Spectroradiometer (MODIS) and testing its utility in monitoring fires is just beginning.

## DEPARTMENT OF COMMERCE/INTERNATIONAL TRADE ADMINISTRATION

<http://www.environment.ita.doc.gov>

<http://www.ita.doc.gov>

### Environmental Technologies Industries (ETI)

The Environmental Technologies Industries (ETI) office is the principal resource and key contact point within the U.S. Department of Commerce (DoC) for U.S. environmental technology companies. ETI's goal is to facilitate and increase exports of environmental technologies, goods, and services by providing support and guidance to U.S. exporters. ETI staff covers key countries, with an emphasis on designated emerging markets, including China. ETI and EPA's Office of International Activities co-chair the bilateral U.S.-China Joint Commission on Commerce and Trade (JCCT) Environment Subgroup. ETI recently published the *Partnering in China for Environmental Companies* and an updated, comprehensive report, *China Environmental Technologies Export Market Plan*. For copies of these or other publications see [www.usatrade.gov](http://www.usatrade.gov) (Search "Market Research"). For more information about resources for environmental companies seeking business opportunities in China, contact Susan Simon, E-mail: [Susan\\_Simon@ita.doc.gov](mailto:Susan_Simon@ita.doc.gov), phone: 202-482-0713.

### Export Assistance Services

The four main areas of DoC's export assistance services include: (1) Environmental Technologies Industries (See above); (2) Market Access and Compliance; (3) Advocacy; and (4) the U.S. and Foreign Commercial Service. The U.S. and Foreign Commercial Service (FCS) at the Department of Commerce is a global network of offices strategically located in more than 220 cities worldwide, offering U.S. exporters a comprehensive range of export facilitation services. In China FCS offices serve American companies in Hong Kong, Beijing, Shanghai, Guangzhou, Chengdu, and Shenyang. China services include market analyses, business counseling, market and policy information, and introductions to Chinese government officials and business contacts. U.S. FCS Contacts:

#### *China*

**Beijing** Phone: (86-10) 8529-6655: Kellie Holloway, Commercial Attaché (ext. 819, [Kellie.Holloway@mail.doc.gov](mailto:Kellie.Holloway@mail.doc.gov)) or Xiaolei Wan, Commercial Specialist, (ext. 839, [Xiaolei.Wan@mail.doc.gov](mailto:Xiaolei.Wan@mail.doc.gov))

**Chengdu** Phone: (86-28) 558-3992/9642: Helen Peterson, Principal Commercial Officer ([Helen.Peterson@mail.doc.gov](mailto:Helen.Peterson@mail.doc.gov)) or Chen Ling, Commercial Specialist ([Ling.Chen@mail.doc.gov](mailto:Ling.Chen@mail.doc.gov))

**Guangzhou** (86-20) 8667-4011: Ned Quistorff, Principal Commercial Officer (ext. 15, [Ned.Quistorff@mail.doc.gov](mailto:Ned.Quistorff@mail.doc.gov)) or Christine Huang, Commercial Specialist (ext. 18, [Christine.Huang@mail.doc.gov](mailto:Christine.Huang@mail.doc.gov))

**Hong Kong** (852) 2521-1467: Joel Fischl, Commercial Consul ([Joel.Fischl@mail.doc.gov](mailto:Joel.Fischl@mail.doc.gov))

**Shanghai** (86-21) 6279-7055: James Mayfield, Commercial Officer ([James.Mayfield@mail.doc.gov](mailto:James.Mayfield@mail.doc.gov)) or Gerry Zhao, Commercial Specialist (Mobile Phone: 86-130-0418-9928, [TsingsongChao@mail.doc.gov](mailto:TsingsongChao@mail.doc.gov))

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#### *Philippines*

**Manila** (63-2) 887-1345: Stewart Ballard, Senior Commercial Officer, Foreign Commercial Service Liaison to ADB ([Stewart.Ballard@mail.doc.gov](mailto:Stewart.Ballard@mail.doc.gov)) or Cecile Santos, Commercial Specialist, [Cecile.Santos@mail.doc.gov](mailto:Cecile.Santos@mail.doc.gov)

### U.S. Joint Commission on Commerce and Trade (JCCT)

Established in 1992, the mission of JCCT is to facilitate development of commercial relations between the United States and China with the direct objective of promoting bilateral commercial agendas. JCCT, which meets annually in a plenary session, is led by the U.S. Secretary of Commerce and the Chinese Ministry of Foreign Trade and Economic Cooperation (MOFTEC). The JCCT's Environment Subgroup organizes, and supports events and programs such as technology demonstrations, training workshops, trade missions, exhibitions, conferences, and seminars that foster environmental and commercial cooperation between the two countries. For information about official activities of the Environment Subgroup, contact Susan Simon ([Susan\\_Simon@ita.doc.gov](mailto:Susan_Simon@ita.doc.gov)).

## DEPARTMENT OF ENERGY

[www.doe.gov](http://www.doe.gov) [www.international.energy.gov](http://www.international.energy.gov) [www.oit.doe.gov/international/china.shtml](http://www.oit.doe.gov/international/china.shtml)

*(Editor's Note: For more information on DoE supported projects in China see entries under Battelle-Advanced International Studies Unit, Environmental Protection Agency, Lawrence Berkeley National Laboratory, and National Renewable Energy Laboratory in the government activities section; see also Institute for International Energy Efficiency, Export Council for Energy Efficiency, Center for Clean*

*Air Policy, U.S.-China Energy and Environment Technology Center, Tulane University in the U.S. and international NGO activities section)*

### **Capacity Building: Natural Gas Training and Certification**

**Focus:** Energy Capacity Building, Energy Training

**Partners:** China Petroleum and Chemical Industries Association; Energy Environmental Technology Center (EETC) at Tulane University; Gas Technology Institute; Shanghai Shenzhen Group (Shenzhen)

**Schedule:** Initiated 2001, Targeted Completion 2003

This proposed Sino-U.S. project would address the need to enhance the broad-based adoption of natural gas in the vast urban areas of China, while simultaneously enhancing the market share of U.S.-made equipment and components. The Chinese government is embarking on the construction of a major gas pipeline (targeted for completion in 2003) that will deliver natural gas from west China to the eastern coast. In anticipation of the completed pipeline, this project is designed to systemically and effectively build a team of certified regulators, managers, engineers, planners, marketers, and technicians for the Chinese natural gas industry. As the first step in this capacity-building work, in November 2001 U.S. and Chinese teams worked together to identify the most important topics to develop course outlines for a week-long workshop, which will be delivered in China by a U.S. instructor. The workshop will be offered to 200 Chinese natural gas industry representatives in October 2002. This workshop will lead to the development of future courses. Future courses will be offered to Chinese natural gas industry representatives for a fee, so as to establish a self-supporting training program.

### **Climate Science Study**

**Focus:** Atmospheric Research

**Partners:** Chinese Academy of Sciences; China Meteorological Administration; State University of New York at Albany; State University of New York at Stony Brook; Portland State University; Oregon Graduate Center, Lawrence Livermore National Laboratory; Pacific Northwest National Laboratory; Oak Ridge National Laboratory; U.S. National Climatic Data Center; U.S. National Center for Atmospheric Research

**Schedule:** Initiated 2000, Targeted Completion 2005

Under Annex V of the Protocol on Cooperation in the Field of Fossil Energy Technology Development and Utilization, Chinese and U.S. government and university researchers are undertaking a broad range of joint climate studies which aim: (1) to prepare climate data for validating and improving global and regional general circulation climate models; and (2) to use the improved models to project regional climate changes and the associated impact caused by increasing greenhouse gases and aerosols. The climate studies focused on four research areas: (1) analysis of general circulation models; (2) climate data preparation and analysis; (3) measurements of atmospheric trace constituents; and (4) impact of climate change on human and natural systems.

### **U.S.-China Oil and Gas Industry Forum**

A U.S.-China Oil and Gas Industry Forum was established in 1998 to promote exchange that will assist China in its efforts to secure reliable and economical sources of oil and natural gas. The forum is helping to identify and facilitate new opportunities for U.S. industry in China's petroleum development. The forum has held major meetings, in November 1998 (Beijing), in July 1999 (Houston), and in September 2001 (Beijing). A major focus has been on sharing technical expertise with China in its effort to enhance natural gas development and use and incorporate natural gas strategies into the Tenth Five-Year Plan (2001-2005). A U.S. government natural gas technical experts team visited Beijing in February 2000 and a return visit to Washington by a group of Chinese natural gas experts occurred in May 2000. Participants in the forum are discussing plans to convene a fourth major meeting.

### **U.S.-China Protocol for Cooperation in the Field of Fossil Energy Technology Development and Utilization**

This protocol was signed in April 2000 and aims: (1) to identify the developing export and international business opportunities in partnership with U.S. private industry in China; (2) to develop technical programs and implementing policy that will enhance U.S. energy industry's competitiveness in the Chinese market; and (3) to promote technologies and solutions that will improve the global environment and increase U.S. energy security. Two conferences were held in China in August 2001 after the signing of the protocol: (1) U.S.-China CO<sub>2</sub> Emission Control Technology and Science Conference (Hangzhou); and (2) U.S.-China Clean Energy Technology Forum and Technology & Equipment Exhibition (Beijing). The five annexes in this protocol are:

*Annex I (Power Systems):* Three activities are being planned in the areas of: (1) integrated gasification combined cycle; (2) a seminar on electric grid modeling; and (3) a handbook on flu gas desulfurization.

*Annex II (Clean Fuels):* Draft of joint activities still under negotiation.

*Annex III (Oil and Gas):* See Capacity Building: Natural Gas Training and Certification entry above.



*Annex IV (Energy and Environmental Technologies):* Under this annex the National Energy Technology Laboratory is planning several activities for implementation in fall 2002 or early 2003. These activities include: (1) developing flue gas desulfurization technology manual and training sessions in China; (2) conducting low-NO<sub>x</sub> combustion and sulfur dioxide control workshops; and (3) studying CO<sub>2</sub> sequestration by spraying concentrated aqueous NH<sub>3</sub>, and production of a modified NH<sub>4</sub>HCO<sub>3</sub>.  
*Annex V (Climate Science):* See Climate Science entry above.

## **DEPARTMENT OF THE INTERIOR/FISH AND WILDLIFE SERVICE (FWS)**

<http://www.fws.gov>

<http://international.fws.gov>

### **Cooperation Agreement: U.S.-P.R.C. Nature Conservation Protocol**

**Focus:** Conservation Management, Conservation Training

**Partners:** Chinese State Forestry Administration, Ministry of Agriculture, Chinese Academy of Sciences

**Schedule:** Initiated 1986, Ongoing

The Fish and Wildlife Service (FWS) administers activities with China under the bilateral Nature Conservation Protocol, signed in 1986 and recently extended through 2006. Funding comes principally from appropriations to the FWS Division of International Conservation. Exchanges carried out in 2001 included: (1) training of Chinese specialists in New York and San Francisco on techniques for inspecting shipments of wildlife and their parts under the Convention on International Trade in Endangered Species (CITES); (2) evaluation by a U.S. team of aquatic habitat quality in the Yangtze and Pearl rivers; (3) visit by U.S. specialists to northwest China to observe measures to conserve argali sheep; and (4) visit to China by American wildlife agency and zoo staff for talks on policies governing panda loans to U.S. zoos. In the near future, FWS work in China will focus on: (1) special problems associated with international trade in amphibians and reptiles; (2) wetlands evaluation and conservation; and (3) comparative assessment of wild sheep habitat management in western regions of the United States and China.

## **ENVIRONMENT PROTECTION AGENCY (EPA)**

<http://www.epa.gov>

*(Editor's Note: All EPA activities listed below are subject to appropriated funds and resources)*

### **Air Quality Improvement in Shanxi**

**Focus:** Air Quality Management, Air Quality Policy

**Partners:** Resources for the Future, Norwegian Institute for Air Research, RCA Associates, Chinese Research Academy of Environmental Science, Shanxi Provincial Government, Taiyuan Municipal Government

**Funding:** Asian Development Bank

**Schedule:** Initiated 2001, Targeted Completion December 2002

Resources for the Future (RFF) leads the project team to carry out an emissions trading demonstration pilot project in Shanxi Province. The EPA is providing technical assistance in the design of the demonstration project and delivering emissions trading training courses in Shanxi. At a meeting in July 2001, project stakeholders determined that success for the demonstration project would depend on the establishment of compliance infrastructure (e.g., standardized emissions measurement, tracking systems, enforcement guidelines) that would form the basis for a future emissions trading program among the participating enterprises. Another aspect of the study will be to analyze the costs of making emissions reductions and to estimate potential cost savings of a trading program.

### **Air Quality Management Assessment Project**

**Focus:** Air Quality Management

**Partners:** State Environmental Protection Administration (SEPA), Shanghai Environmental Protection Bureau (EPB)

**Schedule:** Initiated November 1999, Ongoing

The EPA initiated a joint assessment of China's air quality management process with SEPA in November 1999. The main objective of phase I of the assessment was to analyze the various components of the Chinese and U.S. systems and identify techniques and technologies that could reduce air pollutant emissions in large urban areas. The technical exchanges have focused on: (1) current U.S. and Chinese programs for ambient air monitoring; (2) emission inventory development; (3) air quality dispersion modeling; and (4) development of air quality improvement strategies. Critical outputs of the assessment will include recommendations for strengthening the technical and regulatory infrastructure of the existing program in Shanghai and identification of potential implementation projects that demonstrate application of an integrated air quality management (AQM) process.

Because of the increasing concern of the impacts of transboundary air pollution from Asia on domestic air quality, EPA will focus support on China's efforts to enhance its capacity to manage air quality by providing assistance with building capacity in the areas of: (1) monitoring; (2) modeling; (3) emission inventory development; (4) application of source apportionment techniques; (5) development of integrated control strategies and technology; and (6) information transfer (training, public participation, and outreach). Phase II for this project will focus on the development and implementation of demonstration projects for the pilot city of Shanghai. An English language version of the project report will be available in May 2002. (*Editor's Note: The Shanghai Team gave a presentation at the Wilson Center on 22 March 2002 and the meeting summary is in this issue of the China Environment Series*)

### **Building Energy Efficiency**

**Focus:** Energy Efficiency Capacity Building

**Partners:** Ministry of Construction (MOC), China Center for Energy Conservation Product (CECP)

**Schedule:** Initiated October 2000, Ongoing

This effort promotes improvement in building energy efficiency through the application of EPA's building energy-efficiency benchmarking tool. The internet-based tool, which is a core element of the *U.S. Energy Star for business program*, provides an energy-efficiency score that allows building owners and managers to easily measure building energy efficiency and track it over time. The tool facilitates comparisons between dissimilar buildings, and adjusts for size, occupancy, operating hours, climate and weather, and other factors that affect energy use. The EPA and its Chinese partners also are considering additional future activities to develop institutional capacity in China to improve building energy efficiency through voluntary, profitable measures.

### **Cleaner Air and Cleaner Energy Technology Cooperation**

**Focus:** Energy Technology Development, Energy Policy

**Partners:** State Development Planning Commission (SDPC), Tsinghua University, National Renewable Energy Laboratory

**Schedule:** Initiated 1999, Targeted Completion 2002

This project expanded work under the Technology Cooperation Agreement Pilot Project (TCAPP), a collaborative effort sponsored by the EPA, USAID and DoE, with partners in seven countries around the world. The global TCAPP work has been influential as a model of an effective, strategic approach to technology transfer and market transformation under the UN Framework Convention on Climate Change. The technology cooperation work in China has focused on development and implementation of investment and commercial market strategies, and clean energy technology projects in four key areas: (1) efficiency improvements in industrial coal-fired boilers; (2) clean coal technology for electric power generation; (3) high-efficiency electric motors and motor systems; and (4) grid-connected wind electric power. The project also included support to the Chinese partners in evaluating a wide range of technology opportunities and in identifying additional technology priorities based on potential for greenhouse gas reductions, sustainable development benefits, and commercial market deployment. Major activities in each of the four technology areas have included: (1) the formation of expert teams; (2) identification of barriers to technology market development; and (3) creation of preliminary market development strategies. During 2000-2001, the primary focus was on implementation of the initial wind and energy-efficient motors strategies. Investment workshops were conducted in both sectors, with international competitive bids for large-scale wind farm concessions as the focus of the wind workshop. Investment projects also were developed, with two phases of new and retrofit high-efficiency motors in the petroleum sector competed in 2001 and a third phase to be implemented in 2002 with a great potential to expand to many petroleum companies. Clean coal technology and industrial boiler efficiency work plans were developed during joint U.S.-China team meetings in 2001. In 2002, initial market and project development actions will be undertaken for these technology areas. In addition to capacity building and market development actions for industrial boilers and clean coal technologies, strategies for all four key technology areas will be fully documented and, where possible, connected to longer-term sources of support. The partners will compile a report documenting the experience, successes and lessons learned from the project for wide distribution within the UNFCCC and other international fora. EPA and SDPC have agreed to continue technology cooperation in a follow-on project, which will focus available resources on implementing the technology transfer and market transformation strategy for grid-connected wind power. For further information on TCAPP and its China component, see <http://www.nrel.gov/tcapp>.

### **Coal Mine Methane Market Development Plan**

**Focus:** Air Quality Policy

**Partners:** State Administration of Coal Industry

**Schedule:** Initiated December 1999, Completed 2001, Currently transitioning to new project

On 6-8 November 2001, 130 Chinese and foreign experts participated in the 2001 International Coal Mine Methane Investment and Technology Symposium in Shanghai. The symposium was the culminating event in a two-year project designed to identify market opportunities for developing projects at Chinese coal mines to use the methane gas that otherwise would be

vented. The symposium included presentations by industry and government officials that reflected recent progress in methane reduction. Papers presented at the symposium reflected the progress made at identifying, developing, and financing methane reduction projects. Several reports on project opportunities at a number of coal mine administrations reflected the work of the China Coalbed Methane Clearinghouse and mine experts under the joint Sino-U.S. Coal Mine Methane Market Development Project. Under this project, market opportunity reports for eight Chinese coal companies were prepared which pointed to a number of profitable project options at each company. Cosponsored by the former State Administration of Coal Industry and EPA, this project reflects seven years of ongoing cooperation between the EPA and the China Coalbed Methane Clearinghouse in the China Coal Information Institute. The partners are preparing a new joint project aimed at helping coal companies and other companies to turn the coal mine methane opportunities identified into reality. For more information, visit [www.epa.gov/coalbed](http://www.epa.gov/coalbed), [www.ravenridge.com/china.htm](http://www.ravenridge.com/china.htm), <http://www.coalinfo.net.cn>, or contact Karl Schultz of EPA's Coalbed Methane Program at [schultz.karl@epa.gov](mailto:schultz.karl@epa.gov) or the Clearinghouse at [cbmc@public.bta.net.cn](mailto:cbmc@public.bta.net.cn).

### **Cooperation to Assess Benefits of Programs to Reduce Air Pollution and Protect Public Health in China**

**Focus:** Air Quality Management, Health Policy

**Partners:** SEPA, Shanghai Environmental Protection Bureau, Beijing Municipal Government, Environmental Engineering Department at Tsinghua University, Beijing Medical University

**Schedule:** Initiated 2000, Targeted Completion December 2003

This project supports cooperation and capacity development for evaluation and implementation of policies, programs, and investments that reduce local air pollution and greenhouse gas emissions while promoting economic development in Chinese cities. Of key concern is to study the impacts of air pollution on public health. This project is part of the global Integrated Environmental Strategies (IES) program sponsored by EPA, USAID, and other agencies working in 8 developing countries around the world. The program also is coordinating with regional clean air initiatives (sponsored by the World Bank, Asian Development Bank, and other multilateral organizations), and with ongoing efforts of the World Health Organization (WHO), UN Environmental Programme (UNEP), and the OECD. During 2000 and 2001 experts from the China project have made presentations and participated in expert workshops and study tours in India, the United States, Chile, and Germany to promote information sharing and cooperation on air pollution control methods. The central goal of these presentations is to encourage broader efforts to address environmental global problems with solutions that simultaneously meet local needs. The first case study was carried out in Shanghai. In August 2000, the Shanghai Academy of Environmental Sciences (SAES) and the Shanghai Medical University produced a preliminary analysis of the health effects of air pollution in Shanghai. Energy and air quality modeling experts from Shanghai traveled to the United States in April 2001 for technical assistance and training. The Shanghai Municipal government has commissioned SAES to conduct a project develop and analyzes effective strategies for improving air quality management in Shanghai, including a specific component on reducing transport emissions, which is also expected to include applications of the IES tools and methods. For further information on this project and related work under the Integrated Environmental Strategies (IES) program see: <http://www.nrel.gov/icap>. (*Editor's Note: The Shanghai Team gave a presentation at the Wilson Center on 22 March 2002 and the meeting summary is in this issue of the China Environment Series*)

### **Cooperative Study of Natural Gas Utilization in China**

**Focus:** Energy Policy

**Partners:** State Development Planning Commission, Pacific Northwest National Laboratory, University of Petroleum in Beijing

**Schedule:** Initiated 2000, Targeted Completion 2002

A team of experts from government and key technical institutes in China and the United States has been assessing the potential policies and programs for expanding natural gas production and imports into China. The EPA and its partners also are investigating appropriate applications of gas production across the Chinese economy, as well as analyze the climate, environmental, and health benefits of increased gas use. The assessment also may identify opportunities for which international greenhouse gas emissions credits could help finance natural gas projects in various industrial sectors. A draft report was produced in early 2001 by the joint research team led by the University of Petroleum in Beijing and Pacific Northwest National Laboratory (PNNL) in the United States. A workshop was held in Beijing during September 2001 to get feedback from public and private sector stakeholders and discuss in greater detail collaborative opportunities to overcome some of the barriers identified in the study. Findings and comments from the workshop have been incorporated into the draft. The final report (available at <http://www.pnl.gov/aisu>) includes recommendations: (1) for future actions on business and finance training and capacity building; (2) to promote technology transfer and expanded foreign investment; and (3) on policy and regulatory development to support expanded natural gas utilization goals in China. Discussions during and after the September 2001 workshop have indicated significant interest by stakeholders and donor organizations in these recommendations.

**Feasibility Study on the Use of Market Mechanisms to Achieve SO<sub>2</sub> Emissions Reduction in China****Focus:** Air Quality Policy, Air Quality Management**Partners:** SEPA, Chinese Research Academy of Environmental Sciences (CRAES)**Schedule:** Initiated June 1999, Ongoing

The object of this study is to cooperate on examining possibilities for using market-based mechanisms for sulfur dioxide (SO<sub>2</sub>) emissions control in three phases: (1) workshops to examine the U.S. SO<sub>2</sub> emissions trading program and the current SO<sub>2</sub> related problems and policies in China; (2) a pre-design study of the nature and effects of the SO<sub>2</sub> problems in China, available control technologies and costs, and regulatory and institutional issues relevant to the design of an effective emissions trading program; and (3) recommendations on using emissions trading and an exploration of design options for the framework of an SO<sub>2</sub> emissions trading program in China. In the first phase of this project EPA and SEPA met in June 1999 during which SEPA set up a series of briefings with various stakeholders and other government ministries to enhance EPA's understanding of the current SO<sub>2</sub> policies and practices in China. Discussions began on how to work collaboratively to assess the use of emissions trading in China. At the official kick-off workshop held 15-18 November 1999 in Beijing, current SO<sub>2</sub> related policies were discussed along with the use of emissions trading in the United States and results of pilot trading projects in China. A second workshop was held in Washington DC in October 2000 and included a site visit at EPA to view emissions and allowance tracking systems. The Chinese study tour included an inter-ministerial group of Chinese officials (from SEPA, SDPC, and MoF) and practitioners from two municipal EPBs (Benxi and Nantong). Workshop topics included a comprehensive review of the U.S. SO<sub>2</sub> emissions trading program and its key design features, the cost and availability of SO<sub>2</sub> controls in China, the state of environmental modeling, and an analysis of Chinese policies towards air pollution and the revisions to the 1996 Total Emissions Control law.

A first draft of the SO<sub>2</sub> reduction feasibility study was exchanged during meetings in Beijing in July 2001 and working meetings are being arranged for EPA and the Chinese Research Academy of Environmental Sciences (CRAES) to complete the final draft in spring 2002. The final bilingual document will be printed and distributed to interested stakeholders in late 2002. The feasibility study contains: (1) information tracing the evolution of emissions trading and provides a detailed account of the U.S. SO<sub>2</sub> cap and trade program; (2) an analysis from MIT examines options for interfacing the existing levy system in China with emissions trading; (3) background on SO<sub>2</sub> related policies in China; and (4) a recommended framework for an emissions trading program in China. The emissions trading framework in the study focuses on large utility sources (with emissions greater than 5,000 tons/year and/or capacity equal to or greater than 600 MW) in China's Two Control Zones. The Two Control Zones include: (1) an acid rain control zone (where pH of rainfall is less than 4.5 which occurs mainly in southwest China); and (2) an SO<sub>2</sub> control zone (where SO<sub>2</sub> concentrations exceed 60 ug/m<sup>3</sup>, the Class II WHO standard, which occurs in many large cities throughout China but generally concentrated on the east coast). A final workshop may be held in China (summer 2002) to release the findings of the feasibility study and to outreach to other key Chinese environmental officials on the subject of SO<sub>2</sub> emissions trading in China.

Potential next steps include: (1) training sessions focused in the Two Control Zone Area; (2) technical assistance in development of an emissions and allowance tracking system; and (3) assistance with developing guidance for emissions trading in China. The tracking system collaboration would revolve around the construction of an integrated electronic emissions and allowance tracking system. Such a system would help organize and standardize emissions measurement and reporting. The allowance-tracking component could be used if trading was introduced.

**Minimum Energy Efficiency Standards****Focus:** Energy Efficiency Policy**Partners:** China National Institute of Standardizations (CNIS), Lawrence Berkeley National Laboratory**Schedule:** Initiated January 2000, Ongoing

This project supports technology cooperation between CNIS and the Lawrence Berkeley National Laboratory (LBNL). The project funds training sessions (typically 2 to 4 weeks in duration) in Berkeley for CNIS staff, who are trained in the methods used in the United States to establish minimum energy efficiency standards—including data gathering and analysis of engineering, economic, energy and financial factors. As a result of this effort, minimum energy-efficiency standards have been established or strengthened for electronic ballasts (a component of fluorescent lights), refrigerators, and room air conditioners. In fiscal year 2002, work is beginning on a multiyear plan to develop standards for new product classes. Work also is beginning on higher refrigerator standards and a new standard for commercial central air conditioners. The project is expected to continue until LBNL has comprehensively provided training to CNIS in the U.S. standards-development methodology.

**Study of the Effect of Particulate Matter on Children's and Adults' Respiratory Health****Focus:** Health Research, Air Quality Research

**Partners:** SEPA, China National Environmental Monitoring Centre

**Schedule:** Initiated August 1999, Ongoing

This project is a follow-up to a previous cooperative Sino-U.S. epidemiological study (known as “The Chinese Children’s Lung Function Study”) that assessed respiratory health in children and adults, and lung function growth in children, in relation to outdoor and indoor air pollution exposure. The original study was conducted from 1993 to 1996 in the four large Chinese cities of Chongqing, Guangzhou, Lanzhou, and Wuhan. These cities exhibit a wide gradient of exposure to outdoor particulate matter and other air pollutants. The original study was conducted in relatively polluted and unpolluted districts in each city (total eight districts), thus providing intra-city exposure gradients in addition to the overall inter-city gradient. The main purpose of the follow-up is to assess changes in the respiratory health status of the children and adults in relation to changes in outdoor air pollution concentrations and indoor air pollution sources within and across the study districts. A contract is currently being negotiated with the Chinese side to begin work in the original four cities. Data collection and analysis in both the China and the United States are scheduled for completion in 2004.

### **Studies on Health Effects of Arsenic in Inner Mongolia**

**Focus:** Water Quality Research, Health Research

**Partners:** Inner Mongolia Center for Endemic Disease Control and Research

**Schedule:** Initiated November 1999, Ongoing

EPA’s Office of Research and Development (ORD) is conducting and sponsoring research to enhance the scientific basis for understanding the health risks associated with arsenic in drinking water with support from EPA’s drinking water program. The groundwater in western Inner Mongolia is naturally contaminated with arsenic. This arsenic endemic area provides a unique opportunity for assessing health risk of arsenic in humans because the residents have been exposed to a wide range of arsenic concentrations and have become ill with cancer and non-cancer-related diseases. For exposure assessment, it is possible to assess arsenic exposure at individual levels because each family in Ba Men has their own well. Over the past 8 years, Chinese health officials have accumulated a great deal of arsenic exposure and health effects data useful for conducting such epidemiological studies. The investigators in the National Health and Environmental Effects Research Laboratory, EPA/ORD, and the Chinese investigators in Inner Mongolia have established a 5-year cooperative agreement to conduct arsenic research in Inner Mongolia between 1999 and 2004. Epidemiological studies and toxicological studies are in progress to assess the neural, developmental and carcinogenic effects of arsenic. Scientist exchanges between both sides have been conducted to carry out the research. These collaborative efforts have led to the publication of study papers.

### **U.S.-China Partnership for Industrial Pollution Prevention and Energy Efficiency**

**Focus:** Energy Policy, Environment Protection Policy

**Partners:** SEPA

**Funding:** EPA

**Schedule:** Initiated 2001, Ongoing.

EPA will assist SEPA in developing and launching voluntary pollution prevention (P2) and energy efficiency (E2) “beyond compliance” industry-government partnership programs, and provide training and technical assistance in their implementation. The activities included in the pollution prevention and energy-efficiency cooperative agreement will strengthen the ability of SEPA to establish and implement a more economically efficient environmental management policy for China’s industrial sector, focusing on preventing pollution (source reduction) as a preferred approach to environmental management. Objectives of the project are: (1) to conduct pilot voluntary pollution prevention partnership projects at the provincial EPB level, including China’s new National Model Industries program modeled on EPA’s National Environmental Performance Track (NEPT) program; (2) to evaluate the success of the pilot programs in reducing emissions in a cost-effective manner; (3) to design Chinese national-level programs based on lessons learned from the pilot projects; and (4) to recruit industry partners and launch the national-level Chinese programs. If additional resources become available the longer-range objectives are to design and launch a second, higher tier NEPT program and create a Web site to publicize the voluntary P2 partnership programs and link to P2/E2 technical information online.

### **Voluntary Equipment Labeling**

**Focus:** Energy Policy

**Partners:** China Center for Energy Conservation Product (CECP)

**Schedule:** Initiated October 2000, Ongoing

This project, initiated by a request from CECP, works to develop the capacity of CECP to implement and manage a comprehensive voluntary energy-efficiency product labeling program similar to the *U.S. Energy Star* program. CECP receives training and other assistance in selecting new product classes for labeling, establishing criteria for labeled products, and promoting labeled products.

In establishing the criteria for labeled products the project will use U.S. analytic approaches and the plan will prioritize those products for which new labeling would yield the greatest environmental benefits. Assistance draws on U.S. experience in working effectively with manufacturers, retailers, and consumers in the context of a voluntary program. Technical assistance also is provided in strategic planning, development of staffing plans, and creation of critical program implementation tools such as databases.

**LAWRENCE BERKELEY NATIONAL LABORATORY**

<http://china.lbl.gov>

**Appliance Standards, Labeling, and Market Transformation Programs**

**Focus:** Energy Management, Energy Policy

**Partners:** State Economic and Trade Commission, State Administration of Quality, Supervision, Inspection and Quarantine (AQSIQ); SEPA; China Certification Center for Energy Conservation Products (CECP); Global Environment Facility (GEF); Alliance to Save Energy; International Institute for Energy Conservation; U.S. EPA; ICF Kaiser Consulting

**Schedule:** Initiated 1995, Ongoing

Energy-efficiency standards and labeling programs for household appliances have proven to be extremely effective in reducing household electricity consumption in the United States and other developed countries. Several past and current Lawrence Berkeley National Laboratory (LBNL) projects have assisted China to transform markets to promote greater energy efficiency in appliances, particularly in setting minimum energy-efficiency standards and establishing energy labeling programs. Past projects have included: (1) refrigerator standards training; (2) development of a \$10 million GEF refrigerator market transformation project; (3) air conditioning standards training and preparation of market transformation project, sector survey, consumer survey, monitoring in 250 households; (4) training in electronic ballast standards; (5) preparation of a Green Lights GEF proposal; (6) training in fluorescent lamp standards; (7) training in color TV energy-efficiency labeling criteria; and 8) inclusion of standby power management policies in national efficiency labeling. Current LBNL standard setting projects include: (1) training in washing machine standards; (2) training in commercial packaged air conditioner standards; (3) training in the establishment of energy-efficiency criteria for China's energy-efficiency label (similar to U.S. Energy Star); and (4) a cooperative study on the development of a mandatory informational energy label.

**Building Energy Efficiency**

**Focus:** Energy Policy

**Partners:** Energy Efficiency Office and Codes Development Institute, Ministry of Construction, China Building Energy Efficiency Association, Natural Resources Defense Council

**Schedule:** Initiated 1999, Targeted Completion 2003

The energy usage of buildings in China is rising quickly, both in absolute terms and as a share of total energy use. Building energy codes can be a powerful tool for achieving energy-efficiency policy goals. This project is intended to improve the energy efficiency of building design, construction, and operations in China through activities in three areas. The first phase of this project was the development of building energy standards and implementation procedures for the "Hot Summer, Cold Winter" Zone (the region encompassing the Yangtze River basin, home to over 500 million people, also known as the Transition Zone). These energy standards were completed in 2001. The second phase will be the development of building energy standards and implementation for the "Hot Summer, Warm Winter" Zone. Lastly, this project will focus on the development of tighter commercial building efficiency standards for Shanghai. (*Editor's Note: See commentary by Watson and Finamore in this issue of the China Environment Series for more information on building standards work in China*)

**China Energy and Carbon Scenarios**

**Focus:** Energy Policy, Environmental Policy

**Partners:** Beijing Energy Efficiency Center, Stockholm Environment Institute-Boston, Oak Ridge National Laboratory, National Renewable Energy Laboratory, Shell International

**Schedule:** Initiated 1999, Targeted Completion 2002

This project is a collaborative effort between teams of Chinese, and international, primarily U.S.-based, researchers. This study is a scenario-based analysis of energy-efficiency and renewable-energy policies on energy use and pollutant emissions, with the intent of providing input to the Tenth Five-Year Plan and ongoing energy planning activities in China. The project involves construction of computer models on which to run scenarios to analyze the potential impact of specific energy policy measures. The project objectives are: (1) to strengthen and train a leading group of energy policy analysts in China; (2) to develop

alternative energy scenarios in far greater depth than done before; (3) to provide analysis of how to implement energy-efficiency and renewable-energy initiatives; (4) to inform the State Development Planning Commission and other government agencies of new analysis technologies; and (5) to better inform and educate citizens of China and other countries of analysis results.

### **China's Refinery Options and Product Specifications**

**Focus:** Energy Management

**Partners:** Trans-Energy Research, China Petrochemical Corporation, SEPA

**Schedule:** Initiated 2000, Targeted Completion 2002

China's moves to reduce vehicle emissions and improve air quality necessitate the strengthening of petroleum product quality standards, reducing the allowable amounts of sulfur, benzene, aromatics, and olefins in oil, and raising performance indicators such as octane and cetane. These improvements are being proposed as China is becoming increasingly dependent on higher-sulfur crude oil imports from the Middle East. Using a national linear programming model of the Chinese refining system, this project assesses the additional investment costs to the refining sector of meeting increasingly stringent product standards by 2010 (including new city standards to be introduced by the 2008 Olympics in Beijing) and the impact of greater fuel efficiency and the promotion of alternative fuels on China's production and import mix.

### **Evaluating the Outcomes of China's Programs to Promote Improved Stoves**

**Focus:** Energy Policy

**Partners:** University of California (San Francisco), Tsinghua University, Renmin University, China Centers for Disease Control

**Schedule:** Initiated 2001, Targeted Completion December 2002

LBNL and the partners in this project—led by the Institute for Global Health (IGH) at the University of California, San Francisco—will conduct an independent review of the Chinese National Improved Stove Program (NISP) (which was implemented from the early 1980s to the early 1990s) and subsequent market-based efforts to disseminate improved stoves. Initiated in response to rural fuel shortages, NISP was the largest program of its kind in the world, and is credited with providing 180 million households with more efficient and cleaner stoves using coal and biomass fuels. This project will address key questions at the national, regional, and local policy levels through surveys of government units and households. Analysis of survey data will provide evidence upon which to base future household energy policy decisions in China and in other low and middle income countries. Surveys performed in this project will provide a quantitative picture of the NISP and subsequent programs, in terms of extent, management, and utilization, as well as impact on the health of rural populations. Data will be collected simultaneously in two ways: (1) a survey of about 100 government agencies and enterprises will gather data on policies and management practices from the national to the village levels, and on rural stove manufacturers and service providers; (2) a household survey will gather data on health status, household fuel, stove use and efficiency, and indoor air quality from about 3,300 households in three provinces (Zhejiang, Hubei, and Shaanxi) representing different socioeconomic levels.

### **Industrial Energy Efficiency Policy**

**Focus:** Energy Policy

**Partners:** State Economic and Trade Commission, China Energy Conservation Association

**Schedule:** Initiated 1999, Targeted Completion 2002

The State Economic and Trade Commission now faces the task of developing regulations and programs to implement China's Energy Conservation Law, which has been in effect since 1998. Industry always has been a particular focus of energy-efficiency work in China since it consumes about two-thirds of China's commercial energy. This project will demonstrate the implementation of a voluntary agreement framework at two steel mills in Shandong, including the development of supporting regulations and reporting structures.

### **Residential Energy Consumption Survey/China RECS**

**Focus:** Energy Research

**Partners:** National Bureau of Statistics

**Schedule:** Initiated 1999, Target Completion 2002

Detailed surveys of household energy use, appliance ownership, and energy expenditures are crucial basic data for developing energy standards and assessing the impact of other energy-efficiency measures. Such a survey has not been conducted before in China. This pilot survey of household energy consumption covers 250 households in five cities, and will provide an important snapshot of current energy-consumption conditions and trends. Initial results of the study will be released in a report in early 2002.

**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (DEPARTMENT OF COMMERCE)**

<http://www.noaa.gov>

**Chesapeake Bay National Estuarine Research Reserve-Tianjin Paleocoastal and Wetland Reserve Exchange**

**Focus:** Coastal Conservation Research, Conservation Management

**Partners:** Chinese State Oceanic Administration (SOA), Tianjin Oceanic Administration

**Schedule:** Initiated 1998, Ongoing

In May 2001, SOA and the Tianjin Oceanic Administration hosted three U.S. experts for meetings and discussions on the partner reserve relationship established in 1998. Delegates and representatives discussed the U.S. national reserve network system and administration, current habitat restoration efforts, monitoring, ecotourism, geographical information systems (GIS) applications, the new Tianjin reserve education plan, recent biodiversity studies of Qilihai Wetland, and water quality monitoring efforts. Specific interests to be pursued following this exchange will focus on the conservation and enhancement of existing ecological integrity of Qilihai Wetlands in terms of vegetation, water quality, and habitat restoration, as well as the establishment of GIS capability and enhanced data management practices for the Tianjin reserve.

**Coral Ecology Monitoring—Partner Reserve Exchanges**

**Focus:** Coastal Research, Ocean Conservation

**Partners:** IUCN-The World Conservation Union, UN Environmental Programme, Florida Keys National Marine Sanctuary-Sanya National Coral Reserve, SOA, Hainan Province and Guangxi Zhuang Autonomous Region Reserve Managers, Reef Check

**Schedule:** Initiated 1999, Completed 2001

In November 2000 and May 2001, the National Ocean Service provided funding support to Reef Check (an international network of regional, national, and local volunteer coordinators who collect scientifically valid data on reef health in their area) and the Chinese State Oceanic Administration for two coral surveying training programs in Hainan Province and Guangxi Zhuang Autonomous Region. After receiving certification in scuba diving, Chinese participants received training in coral monitoring and assessment methodology based on Reef Check protocols. As a result of this project, the Sanya National Coral Reef Reserve and the Weizhou Island reserve managers and staff now have enhanced abilities to document and assess status and trends in coral habitat and associated biodiversity. Both sites are now contributing coral information to the global reef monitoring efforts through Reef Check network and in support of the Global Coral Reef Monitoring Network.

**Coupled Air-Sea Modeling**

**Focus:** Ocean Research

**Partners:** Chinese State Oceanic Administration (SOA)

**Schedule:** Initiated 2002, Targeted Completion 2004

NOAA and SOA will continue to promote international partnership to improve climate modeling and forecasting by utilizing the U.S.-China Marine and Fishery Science and Technology Protocol to develop more research activities and exchanges that focus on modeling the interactions between oceanic and atmospheric aspects. NOAA's Geophysical Fluid Dynamics Laboratory (GFDL) has proposed hosting one research scientist from China at GFDL's Princeton facility for one year. The primary research area will be in ocean modeling/ocean data assimilation and investigating the application of ARGO data for global and regional ocean state estimation.

**Marine and Coastal Management Program**

**Focus:** Marine Policy, Marine Research

**Partner:** Chinese State Oceanic Administration (SOA)

NOAA's Marine and Coastal Management Program has the following three priorities regarding the management of coastal and near-shore environments in the cooperative program with China:

**1) Legislation and Policy.** NOAA is assisting in the development of China's national coastal resource management regime. Since this cooperative program was established in 1998, China has updated its Marine Environmental Protection Law (2000) for the first time since 1982 to strengthen attention on ecology and other areas. In January 2002, China's first Sea Area Use Law was promulgated, shaped in part by research and policy exchanges with NOAA that had taken place 14 months earlier. In October 2000, SOA Administrator Wang Shuguang led a seven-person delegation to the United States for meetings with U.S. agencies involved in sea area use management at the national and local levels. Through this exchange, the Chinese delegation received briefings on U.S. marine strategy and marine policy, structure and operational issues in marine management in the United States,



and marine enforcement practices. Presentations on sea area and coastal zone policy and legislation, licensing/leasing and permitting regulations and practices, interagency coordination and jurisdictional division of authorities, and intergovernmental coordination were provided to the delegation. Resource management and use issues concerning marine protected areas, living marine resources and fisheries, offshore minerals, shipping and navigation, and coastal and marine ecology were also discussed. China is currently looking at various models for national legislation for integrated coastal management that may be passed between 2005 and 2007.

**2) Marine Environmental Quality and Coastal Monitoring.** NOAA is promoting exchanges between the three partner reserves, which are addressing management and monitoring issues. In addition, NOAA's Marine and Coastal Management Program and SOA are currently producing a report examining China's marine monitoring experiences since 1972. This report should provide insight into data collection, management, gaps, and general environmental conditions in China at a level of detail currently unavailable.

**3) Integrated Coastal Management and Marine Protected Area Management.** NOAA transfers information and exchanges experiences to operationalize integrated management processes involving multi-stakeholder groups and various sectoral interests. NOAA's Marine and Coastal Management Program seeks to increase interdisciplinary and nongovernmental input into resource management practices, priorities and decision-making. NOAA and China have established three U.S.-China sister marine reserve partnerships and are helping the emergence of a national program and designation of additional key sites as reserves.

## **Marine Pollution Assessment and Management**

**Focus:** Water Management, Ocean Research

**Partners:** EPA, Chinese State Oceanic Administration (SOA), SEPA, Chinese Ministry of Agriculture

**Schedule:** Initiated July 2000, Targeted Completion 2002

In July 2000, a delegation of U.S. and Chinese partners met to discuss a forthcoming joint report on marine monitoring experiences in China since 1972. The report summarizes the national marine environmental monitoring infrastructure and operational mechanisms and data collected from 1979 to 1999 in China. The report also distills "lessons learned" from China's experiences that may be applicable to other countries. The first draft, tentatively entitled *Marine Environmental Monitoring in China: Lessons learned from Successes and Failures* is currently being peer-reviewed. The report will be distributed in hard and electronic copy in 2002.

## **Mooring Buoy Training and Demonstration Projects—Partner Reserve Exchanges**

**Focus:** Coastal Conservation, Conservation Training

**Partners:** National Coral Reef Reserve and Weizhou Island Coastal Managers and Agencies

**Schedule:** Initiated 2000, Completed 2001

In June 2000 and August 2001, two mooring buoy demonstration projects were completed at the Sanya National Coral Reef Reserve (Hainan Province) and Weizhou Island (Guangxi Zhuang A.R.). These areas are sites for emerging numbers of recreational tourist divers. In order to prevent small tour boats from dropping anchor and causing permanent damage to the coral reef, mooring buoys will be provided for tying up the vessels. In addition, mooring buoys also can be used for zoning certain restricted areas to protect particularly fragile reef areas from boat traffic, fishing, and tourism. These projects were coupled with discussions on local education strategies for these sites. In Sanya, six mooring buoys were installed in the reserve during a weeklong training and installation session. In Weizhou, two buoys were installed and six anchor eyes deployed.

## **Ocean Observations**

**Focus:** Ocean Research

**Partners:** Chinese State Oceanic Administration (SOA)

**Schedule:** Initiated March 2002, Ongoing

At the 15 March 2002 meeting of the U.S.-China Joint Working Group on Cooperation in the Field of Marine and Fishery Science and Technology (attended by officials and scientists from NOAA, SOA, National Center for Atmospheric Research in Boulder Colorado, Chinese Academy of Fishery Sciences, and the Embassy of China) held in Maryland, NOAA and SOA agreed to continue cooperation by participating in the implementation of the global ARGO Program. ARGO is a global array of 3,000 free-drifting profiling floats that measure the temperature and salinity of the upper 2,000 meters of the ocean. The data collected will allow continuous monitoring of the climate state of the ocean (ARGO homepage: <http://www.argo.ucsd.edu>). NOAA will provide scientific and technical training in the development of capacity so its Chinese counterparts will be able to manage their own national ARGO program. China plans to launch an initial deployment of three ARGO floats in the summer of 2002 and intends to deploy more floats in the coming years if additional funding is secured. Specific examples of collaborative activities include: (1) technical assistance in the deployment of ARGO floats; and (2) training on the utilization and assimilation of resulting data to produce improved climate forecasts. NOAA will support the training of two engineers from the Second Institute

of Oceanography (Hangzhou) at University of Washington (Seattle) and at the NOAA Atlantic Oceanographic and Meteorological Laboratory (Miami, Florida).

### **Offshore Aquaculture and Coastal Modeling**

**Focus:** Ocean Research, Conservation Research

**Partners:** Chinese Academy of Fishery Sciences

**Schedule:** Ongoing

The United States and China are continuing their exchange of knowledge and experience to promote the ongoing cooperation to optimize integrated aquaculture and fisheries, and adopt eco-friendly practices to help sustain and increase production in both countries. Continued mutual interests between the two countries are: (1) the commercialization of cold-water shrimp; (2) mitigation of shellfish disease; (3) transfer of seaweed (nori) biomediation technology; (4) technology transfer for ornamental fish; and (5) coastal modeling techniques to coastal ecosystem management in the areas where heavy aquaculture and fisheries activities and multi-user activities are taking place. At the next Living Marine Resources joint coordination panel meeting both the United States and China will hold dialogues among aquaculture scientists who are interested in offshore ecosystem-based aquaculture and coastal modeling topics to determine the present status of development and capabilities in both countries.

### **Polar Sciences**

**Focus:** Polar Research

**Partners:** SOA, Chinese Arctic and Antarctic Administration, The Second Institute of Oceanography, Chinese Meteorological Administration, Institute of Atmospheric Physics, Chinese Academy of Sciences, Chinese National Science Foundation

**Schedule:** Initiated October 2001, Ongoing

At meetings in Beijing and Hangzhou between officials from NOAA and several Chinese agencies (See partner list above) there was general agreement that a Panel on Polar Sciences should be established under the U.S.-China Marine and Fishery Science and Technology Protocol. Both countries finalized the establishment of this new panel at the 15th Joint Working Group meeting on 5 March 2002. The long-range goal of the panel will be to develop mutual interest in the following five scientific themes: (1) role of the arctic in global climate change; (2) long-range transport of contaminants to the Arctic; (3) polar ocean exploration; (4) Antarctic environment monitoring and research; and (5) atmosphere-ice-ocean interaction in the Southern Ocean.

### **Regional Case Study: Integrated Marine Ecological Management for the Beibu Gulf**

**Focus:** Ocean Research, Ocean Conservation

**Partners:** IUCN-The World Conservation Union

**Schedule:** Initiated 2000, Ongoing

In June 2000, NOAA and SOA delegations met in Beihai (Guangxi Zhuang A.R.) to select a geographical focus for a proposed regional, long-term cooperative program for integrated coastal management. The selected region is centered on the Beibu Gulf and three special coastal areas at Shankou, Sanya, and Weizhou Island. Key elements of this multiyear program include: (1) fostering integrated coastal management at three sites with technical cooperation in ecological monitoring; (2) local and regional GIS applications; (3) habitat research; and (4) education and outreach.

### **Rookery Bay National Estuarine Research Reserve-Shankou National Mangrove Reserve**

**Focus:** Coastal Conservation

**Partners:** IUCN-The World Conservation Union, Chinese Nature Reserves

**Schedule:** Initiated 2000, Ongoing

In December 2000, representatives of NOAA and IUCN-The World Conservation Union traveled to Guangxi Zhuang Autonomous Region to visit the Shankou National Mangrove Ecosystem Nature Reserve as well as to Weizhou and Xieyang islands. The main objective of this visit was to continue personnel exchange and collaboration between the U.S. and Chinese sister reserves focusing on ecotourism, education, outreach and research.

### **Surface, Land, and Ocean Data Exchange**

**Focus:** Ocean Research

**Partners:** Chinese State Oceanic Administration (SOA)

**Schedule:** Ongoing

At a March 2002 meeting, the United States and China agreed to continue exchanges of oceanographic/climate data and information, as well as to improve communication among scientists specializing in these areas. This strengthened data exchange will take place under the existing bilateral science and technology frameworks (both at the policy and working levels).

## **Yellow Sea Large Marine Ecosystem Project**

**Focus:** Ocean Conservation, Ocean Research

**Partners:** NOAA's National Marine Fisheries Service, SOA, Global Environment Facility (GEF)

**Funding:** \$25 million (Global Environment Facility, GEF)

**Schedule:** Ongoing

Among the 50 largest large marine ecosystems (LME) in the world's oceans, the Yellow Sea LME has been one of the most significantly affected by human development. NOAA's National Marine Fisheries Service has worked with SOA for the past several years to develop the Yellow Sea Large Marine Ecosystem Project. The long-term development and environmental objective of this project is to promote ecosystem based, environmentally sustainable management and use of the Yellow Sea LME and its watershed. This project will include joint international efforts by China, the United States, and the Republic of Korea to develop and implement: (1) regional strategies and actions for sustainable management of fisheries and marine culture, including conducting joint productivity and fish population surveys and assessments; (2) ecosystem-wide initiatives and actions for biodiversity protection; (3) actions to reduce human and environmental stress on the ecosystem; and (4) regional capacity building for carrying forward the long-term project objectives. NOAA's contributions will be scientific and technical including: (1) assistance and training in methodologies for advanced measurements of ecosystem-wide productivity and carrying capacity for fish and fisheries; and (2) applications of satellite remote sensing, fishery demographics, environmental indexing, and improved socioeconomic and governance profiling and assessments.

## **NATIONAL RENEWABLE ENERGY LABORATORY**

<http://www.nrel.gov/china>

## **Technology Cooperation Agreements Pilot Project (TCAPP)**

**Focus:** Energy Research, Energy Policy

**Partners:** Chinese State Development Planning Commission (SDPC), EPA

**Schedule:** Initiated 1997, Ongoing

The Technology Cooperation Agreements Pilot Project ([www.nrel.gov/tcapp](http://www.nrel.gov/tcapp)) is an initiative of the U.S. government that is assisting developing countries in attracting clean energy investments to meet development needs and reduce greenhouse gas emissions. In late 1997, TCAPP was initiated in China and the Chinese government developed a technology cooperation framework that detailed technology priorities important for development as well as mitigation of greenhouse gas emissions. The National Renewable Energy Laboratory (NREL) leads implementation of TCAPP for the U.S. government and has established a team of technical experts to assist them in their China TCAPP work. SDPC is the lead organization for this project in China. Under TCAPP teams were formed in: (1) efficient motors; (2) grid-connected wind power; (3) industrial boilers; and (4) clean coal technology, with broad representation from the government, utility, industry and research communities. During an interagency meeting in January 2000, six actions in the wind and motors sectors were selected for implementation and are outlined below. In 2002, work in motors, industrial boilers, wind and clean coal technology will continue. In 2003, as the next phase of the TCAPP program develops, activities will focus on grid-connected wind power.

**1) Wind resource assessment.** The team has translated NREL's resource assessment and monitoring handbook into Chinese for training. The team identified high-priority regions for assessment and prepared part of a proposal that has been packaged into a larger UNEP/GEF Solar and Wind Energy Resource Assessment Project to secure funding to expand earlier assessment activities. The team already has been instrumental in securing endorsement from the Chinese Ministry of Finance for this project proposal. Work should begin on this project in 2002. A proposal for wind measurement equipment has been prepared for a UN Development Programme (UNDP) renewable energy program. A CD-ROM of wind maps and data for southeast China is being prepared.

**2) Wind turbine testing for certification.** NREL provided IEA Recommended Practices and international standards information to the wind team and met with the team to explain testing and certification processes in the United States. The China Classification Society (CCS) is preparing the Chinese certification scheme for wind turbines and a Chinese testing organization is being identified. NREL and the Ministry of Science and Technology cosponsored a wind turbine-testing workshop in July 2000 in Beijing to build local capacity in types of testing and certification, testing protocols, and equipment. Six CCS staff attended a training at NREL on design evaluation certification in June 2001. This training was followed by a hands-on training on turbine testing at in February 2002.

**3) Wind business partnerships.** Wind business partnerships are being developed in five activity areas:

*a) Wind workshop*—The wind team helped host a wind concessions workshop in Guangzhou in late 2001 to strategize large-scale wind farm development that would attract private sector developers and investors. SDPC met with potential developers to

outline the bidding process for 80-100 MW wind concessions in Guangdong and Jiangsu provinces and to promote dialogue between stakeholders.

*b) Wind industry roundtable*—Members of the wind team, Chinese wind companies, and U.S. wind industry met in April 2002 in DC to discuss how: 1) to further develop business partnerships between international and Chinese companies; 2) to help the Chinese to develop wind in a way that will attract more private investment; and 3) to help the Chinese develop wind more competitively.

*c) Motors Training*—The goals of this action are: (1) to identify training needs and potential host institutions; (2) to secure funding for a training center; (3) to provide motors selection and motors systems design software and training; and (4) to initiate training. To fund the establishment of an Efficient Motors Exhibition and Training Center to house training activities, the motors team has prepared a proposal that can be used to solicit additional donor support. The motors team cosponsored and attended conferences in which they presented this proposal.

*d) Motors Testing, Labeling, Standards and Certification*—The goals of this action are: (1) to provide information on test protocols, certification, and standards; (2) to assist in selection of appropriate protocols, certification, and standards; (3) to find potential hosts for testing; (4) to help secure funding for testing facility and equipment; and (5) to initiate training in testing, standards, and certification.

*e) Motors financing and business partnerships*—The motors team and the International Institute for Energy Conservation (IIEC—*Editor's Note: see CES 4 inventory for previous NREL-IIEC cooperation*) are providing technical assistance to three high-efficiency motors pilot projects with Shengli Oil Company, the second largest oil company in China. In 2001, 100 units of permanent magnet motors and 10 A/C motors were installed. Assistance includes monitoring of the energy savings and analysis of the results. An expanded pilot project will begin in 2002.

**4) Boiler Technology Transfer.** Potential sites for industrial boiler pilot projects are being identified and evaluated. A coal mine in northern China and a briquette-making operation are under consideration. An underlying goal of this first action is to help facilitate business development activities. Thus, information exchange will be facilitated between small- and medium-sized companies, trade organization, manufacturers, and project developers. Work also will include an assessment of appropriate technologies for industrial boilers in China.

**5) Industrial Boiler Business Partnerships.** A study tour in fall 2002 will educate Chinese experts on advanced boiler and boiler-related technologies available in the U.S. and internationally, and provide the opportunity to form partnerships with the private sector. The study tour will consist of presentations on various technologies as well as visits to numerous industrial boiler plants. During the study tour the Chinese experts will participate in a private sector debriefing with U.S. industry to introduce this industrial boilers project and to discuss technical needs and interests in China, potential commercial project ideas, and recent successes. The U.S. participants will likely include representatives of organizations already working in China, members of the Council of Industrial Boiler Owners (CIBO), American Boiler Manufacturers Association (ABMA), the Business Council for Sustainable Energy, and other industry leaders.

**6) CCT Evaluation Models.** Two models (Total Life Cycle Cost Model and Integrated Environmental Control Model) will be supplied to China to assist in evaluating and screening various power technologies, including advanced technologies that operate at higher efficiency and thus, emit less carbon dioxide. Both of these models and software will be provided to China (CCT information Center) to conduct analyses. Training will be provided to a small group of Chinese experts experienced in the use of techno-economic models.

**7) U.S. CCT Study Tour.** A study tour to the United States for a small group of senior Chinese CCT experts and government officials will be organized to visit various CCT demonstration sites, technology vendors, engineering firms, and finance organizations. This study tour will focus on specific issues, including technology transfer issues that China needs to address to move its proposed CCT projects into the demonstration stage.

## U.S.-China Protocol for Cooperation in the Fields of Energy Efficiency and Renewable Energy Technology Development and Utilization

**Focus:** Energy Policy

**Schedule:** Initiated 1995, Ongoing

This protocol (signed in February 1995 by DoE and MOST) focuses on three sustainable energy goals: (1) to advance world energy security interests by helping China develop more diversified energy resources and thereby reduce its future demand for oil; (2) to mitigate environmental damage associated with rapid growth in energy demand through deployment of renewable energy and energy-efficiency measures; and (3) to enhance U.S. industry competitiveness in China's energy market. In this protocol there are six annexes, five of which pertain to renewable energy. Of these, NREL implements annexes on rural energy development, wind energy development, business development, policy and planning, and geothermal production and use. A progress report for this bilateral protocol (also available on CD-ROM) was published in April 2000. It is also available on the Web site at [www.nrel.gov/china/re\\_forum.html](http://www.nrel.gov/china/re_forum.html). Activities under the five annexes implemented by NREL are outlined below.

### ***Rural Energy Development Annex I***

This annex focuses on the use of village scale renewable energy technologies to provide energy or electricity to rural areas in China.

***Ongoing Projects Under Rural Energy Annex I (See CES 4):*** Great Wall PV Demonstration Site; Inner Mongolia Hybrid Household Project; Rural Biomass Collaboration; Rural Renewable Energy Development Training Activities

### **Asia Pacific Economic Cooperation (APEC) Tibet Solar Electrification Project**

Two companies have installed 200 solar home systems (30–36 W systems) in rural areas of Damschung and Phendrop counties within Lhasa prefecture. They identified business development strategies for photo voltaic (PV) installations in Tibet. Lotus Energy and Wisdom Light Group have implemented this project with assistance from the Boulder-Lhasa Sister Cities Program. In 2002, this project, in collaboration with Greenstar, will install a 2 kW PV village power system with Internet communications to help villagers increase local incomes through export of digital art and music. Other APEC activities in China include work in four areas—financing, renewable energy standards, distributed resources, and micro-business development—in which the United States is pursuing activities jointly with other APEC members.

### **Gansu Solar Home System Project**

**Focus:** Renewable Energy Development

**Partners:** Chinese Ministry of Agriculture (MoA), Solar Electric Light Fund, Gansu Solar Electric Light Fund

**Schedule:** Initiated 1998, Ongoing

Photo voltaic (PV) solar systems were installed in 320 homes and ten schools by 1998 as the first phase of this project. Under this project the Gansu Solar Electric Light Fund installed additional 460 PV systems and a revolving credit fund also was set up. The MoA now has expanded its solar home system project to 10,000 households in six provinces. The Solar Electric Light Fund is now pursuing follow-up activities with PV school systems.

### ***Wind Energy Development Annex II***

Activities under the wind energy development annex focus on accelerating sustainable large-scale development of wind power in both grid-connected and off-grid village power applications in China.

***Ongoing Projects Under the Wind Energy Annex II (See CES 4):*** Wind Energy Training

### **Hybrids Industry Working Group**

**Focus:** Energy Training

**Partners:** UNDP, UN Department of Economic and Social Affairs (UNDESA)

**Schedule:** Initiated 2002, Ongoing

**DoE/NREL is working with the UNDP:** (1) to convene regular meetings of China's hybrid systems integrators; and (2) to design and implement training programs for the working group. The next training is planned for 2002 in conjunction with UNDP/UNDESA.

### **Wind Resource Assessment and Mapping**

**Focus:** Renewable Energy Research

**Partners:** U.S. Environmental Protection Agency, DoE, General Hydropower Planning Institute

**Schedule:** Initiated 1998, Completed 1998

DoE/NREL and EPA completed a southeast China wind resource assessment and mapping in 1998 of Jiangxi, Fujian, and the eastern half of Guangdong. The most attractive wind resources are found along these coastal areas and on the offshore islands. A CD-ROM of these wind maps plus additional recent measurement data will be published in 2002.

### **Xiao Qing Dao Village Power Project**

**Focus:** Renewable Energy

**Partners:** State Power Corporation of China

**Schedule:** Initiated 2001, Ongoing

DoE/NREL and the State Power Corporation of China are currently developing a pilot project using a wind/diesel/battery system to electrify 120 households on an island called Xiao Qing Dao located in the Yellow Sea off Shandong Province. The project was commissioned in February 2001. Currently, NREL and its partners are collecting performance and operational data.

### ***Renewable Energy Business Development Annex IV***

Under this annex, DoE/NREL has undertaken workshops and outreach activities that have been successful in helping U.S. companies facilitate business partnerships and develop markets for renewable energy technologies in China. Recent workshops are outlined below (previous workshops are listed in *China Environment Series Issue 4*).

#### *1) Business Development Workshops and study tours*

- a) NREL/CRED led the third U.S.-China Renewable Energy Business Workshop and study tour in September 2001 with seven U.S. companies and organizations in southwest China. The workshop included one-on-one business meetings, factory and site visits, as well as networking with provincial officials and financial institutions. As a result, at least three U.S. companies are pursuing partnerships with Chinese solar companies.
- b) NREL/CRED presented renewable energy technologies and lessons learned at the August 2001 *U.S.-China Clean Energy Technology Forum* in Beijing.
- c) DoE/NREL/APEC and MoA held a *U.S.-China Rural Electrification Workshop* in 1998 to provide information to U.S. companies on rural electrification opportunities and plans and facilitate networking between U.S. and Chinese companies. As a result, six U.S. companies are developing business activities with Chinese companies.
- d) DoE/NREL conducted a follow-up *U.S.-China Renewable Energy Business Workshop* and study tour with 13 U.S. companies in China in November 1999. This workshop and study tour assisted in introducing U.S. companies with potential new customers, distributorships, and partnerships.
- e) A three-day *Wind Energy Business Development and Policy Analysis Workshop* was held in April 1999 to train Chinese officials and companies in business development for grid-connected wind power.

*2) Outreach.* In December 1999, NREL completed a Web site ([www.nrel.gov/china](http://www.nrel.gov/china)) that provides information on the U.S.-China Bilateral Protocol on the Utilization of Energy Efficiency and Renewable Energy Technologies, as well as business and policy information for companies that are interested in the Chinese markets.

### ***Policy and Planning Annex VII***

This annex, which focuses on renewable energy policy and support of the Brightness Rural Electrification Program, was signed between DoE and SDPC in May 2000.

### **Brightness Program Training Certification**

**Focus:** Renewable Energy Training

**Partners:** Institute for Sustainable Power (ISP), Jikedian Renewable Energy Center

**Schedule:** Initiated 2001, Ongoing

NREL and ISP are working with Jikedian Renewable Energy Center to establish a training certification program for the Brightness Program. An initial evaluation of the Brightness Program and training levels was conducted by NREL and ISP in September 2001, and was followed by certification of Master Trainers in the United States in early 2002.

### **Energy Policy**

**Focus:** Renewable Energy Policy

**Partners:** Center for Renewable Energy Development (CRED)

**Schedule:** Initiated 1998, Ongoing

In 1998, staff from the Center for Renewable Energy Development (CRED) participated in a policy study of the United States with DoE/NREL and presented a report comparing U.S. and Chinese renewable energy policies. This led SDPC to advocate renewable energy policy incentives to the State Council, including the creation of a Renewables Portfolio Standard, which became part of the Tenth Five Year Plan (2001-2005).

### ***Geothermal Energy Production and Use Annex VI***

This effort has focused on development of the geothermal heat pump markets and identification and implementation of investment projects.

### **Geothermal Market Development**

**Focus:** Energy Research, Energy Development

**Partners:** U.S. Geothermal Heat Pump Consortium, Beijing Jike Energy New Technology Development Company

DoE, U.S. Geothermal Heat Pump Consortium, and Beijing Jike Energy New Technology Development Company (Jike)

identified eight geothermal heat pump (GHP) projects, three of which—totaling \$5.3 million—have been completed by Trane and Florida Heat Pump Environmental Equipment Company. The Beijing Concordia International Apartment Building, which features 501 GHP units, was commissioned in August 2001. Under this project a GHP training course took place in Beijing in 2000 and Jike is monitoring GHP sites in Beijing and Inner Mongolia for one year to demonstrate energy and cost savings. This work has contributed to a rapidly growing Chinese market for GHP. In 2002 activities will include a market study and the development of a market development strategy.

## OFFICE OF SCIENCE AND TECHNOLOGY POLICY AND LOS ALAMOS NATIONAL LABORATORY

<http://www.lanl.gov/chinawater>

### U.S.-China Water Resources Management Program

**Focus:** Water Management

**Partners:** Ministry of Water Resources (MWR), MOST, MoA, SEPA, SPDC

**Funding:** Office of Science and Technology Policy, National Science Foundation, USDA, U.S. Geological Survey, Army Corps of Engineers, EPA

**Schedule:** Initiated 1999, Ongoing

The U.S. China Water Resources Management Working Group has been formally established as a working group of the U.S.-China Joint Commission Meeting (JCM) on Science and Technology. The Working Group has agreed on objectives and basic principles to guide the cooperative activities, as well as determine priority interest areas and potential activities. Key technical interest areas continue to be: (1) agriculture and forestry; (2) ecosystem dynamics; (3) domestic and industrial water supply and use; and (4) flood and drought planning and mitigation. A critical driver for the Chinese ministries is the implementation of the Tenth Five-Year Plan, which focuses on development of the western regions of the country. Development in this region will be critically dependent on water resources. China also expects a population increase of 400 million people in the next 25 years, which will result in the country running 100 million cubic meters short in water supply. Both sides agreed on the need to develop government and private sector support and funding for bilateral water activities. Program activities have included: (1) kickoff conference in Tucson (April 1999); (2) major U.S. and Chinese investment in GIS and water infrastructure information management (Compaq); (3) an industry workshop in Seattle/Tacoma in April 2001 to address wastewater options; and (4) focus on Green Chemistry to avoid pollution. For more information on this program contact Dr. Dennis L. Hjeresen, Senior Program Manager, Environmental Management Programs, Los Alamos National Laboratory, Los Alamos, NM 87545, [dennish@lanl.gov](mailto:dennish@lanl.gov), Phone: 505-665-7251, Fax: 505-665-8118.

## PEACE CORPS

<http://www.peacecorps.gov>

### Environmental Education Project

**Focus:** Environment Education

**Partners:** Chinese Education Association for International Exchange, Sichuan Educational Association for International Exchange

**Funding:** \$37,000 per year per volunteer in the field from the Peace Corps. Additionally, the post will receive field support throughout the year.

**Schedule:** Initiated 2000, Ongoing

Peace Corps/China (in China, Peace Corps is known as the U.S.-China Friendship Volunteers), responding to requests from its partners in the Chinese government, opened an environmental education program in 2000. Twenty-six volunteers are currently assigned to universities and high schools in Sichuan Province where they teach, develop curriculum, and conduct community environmental education activities. Two of the volunteers also are helping the Environment Volunteers Association at Sichuan University. (*Editor's Note: See feature box for two Peace Corps volunteer vignettes in this issue of the China Environment Series*)

## UNITED STATES GEOLOGICAL SURVEY

<http://www.usgs.gov>

### Biological Resources Discipline Activities

**Ongoing Projects (See CES 4):** *Biological Studies of Shortnose and Other Sturgeons, Comparative Studies of Polecats and Ferrets, Wildlife Resources Education, Training, and Technical Assistance.*

*Below are four projects within the USGS Biological Resources Discipline Activities*

### **Conservation of Ecological and Cultural Diversity in Sichuan Province**

**Focus:** Conservation Management, Biodiversity Research

**Partners:** Chengdu Institute of Biology, Chinese Academy of Sciences, U.S.-China Environmental Fund

**Schedule:** Ongoing

The project is to conserve ecological and cultural resources as national parks are being developed at two World Heritage Sites in Sichuan Province. USGS is helping Chinese partners develop Gap Analysis Program (GAP)/Geographic Information Systems (GIS) capacities in order to inventory and conserve biological resources in the Wolong Nature Reserve Region. Other objectives in this project include: (1) conserving ethnic cultures and biological diversity while developing new economic opportunities in western Sichuan; (2) protecting declining amphibian species; and (3) studying and controlling invasive alien species. Training of Chinese scientists has been conducted in the United States.

### **Economic Development and Conservation of Biological Diversity in Yunnan Province**

**Focus:** Conservation Training

**Partners:** Biological Resources Innovative Development Office in Yunnan Provincial Government

The Yunnan provincial government has initiated a program to improve economic conditions for their people by increasing development of biological resources. The Yunnan Biological Resources Innovative Development Office has requested assistance from the USGS in developing this program. The USGS will assist in: (1) describing the biological resources; (2) developing a GIS-based technology (GAP) to facilitate conservation planning; (3) identifying innovative economic opportunities; and (4) designing education, training, and outreach opportunities. Achieving increased economic opportunities while maintaining ecosystem sustainability is the goal of USGS participation in this project. Accomplishments to date include reciprocal exchanges of key personnel and a short course for Chinese scientists and administrators on biodiversity, economics, GIS, and grant writing. A Research Agreement between USGS and Yunnan's Biological Resources Innovative Development Office was signed in May 2001 to continue the project.

### **Freshwater Mussel Propagation Studies**

**Focus:** Conservation Research

**Partners:** Chinese Academy of Fisheries

The USGS is cooperating with the Chinese Academy of Fisheries on a study of freshwater mussels. The objective is to compare methods used to breed and rear juvenile mussels outdoors and indoors and to evaluate methods used to sustain brood stock in captivity. The project also will test the sustainability of a medium developed in the U.S. for the transformation of the mussel larvae of U.S. and Chinese species. The results will provide information for freshwater mussel propagation studies in the United States.

### **Information Exchange on Invasive Species**

**Focus:** Conservation Research

**Partners:** Institute of Zoology in Beijing

Information on invasive species of concern in China and the United States has been exchanged between the two parties and has resulted in publication of a preliminary summary of some significant biological invasions in China. (Xie Yan, Li Zhenyu, William P. Gregg, and Li Dianmo. 2001. Invasive Species in China: An Overview. *Biodiversity and Conservation*. (10):1317-1341).

### **Geologic Discipline Activities**

*The three projects below are USGS Geologic Discipline Earth Science activities under the USGS and the Chinese Ministry of Geology Scientific and Technical Cooperation in Earth Science Protocol (originally signed 1985 and recently extended to 2006).*

### **Health Impacts of Residential Coal Use in China**

**Focus:** Health Research, Energy Research

**Partners:** Institute of Geochemistry, Guiyang, Armed Forces Institute of Pathology

**Funding:** Chinese National Natural Science Foundation

**Schedule:** Ongoing

The Energy Resources Team of USGS is collaborating with researchers at the Institute of Geochemistry in Guiyang, the Armed Forces Institute of Pathology, and other organizations to evaluate the health impacts of residential coal use in China. Initial activities have focused on Guizhou Province where residential coal combustion has exposed about 10,000 people to toxic levels of arsenic and about 10,000,000 people to excess fluorine. The USGS has: (1) conducted detailed characterization of the coal to determine the concentrations and forms of the toxic elements; (2) conducted preliminary mapping of the distribution of the



toxic elements; (3) developed electronic maps to help relate coal occurrences in China to the incidence of fluorosis and arsenism; and (4) helped develop a field test kit to allow villagers to easily and rapidly determine the arsenic contents of coal samples. Funding has been obtained from the Chinese National Natural Science Foundation, which will allow for the expansion of the project to assess the relation of residential coal use to high incidences of cancer in Yunnan Province and coal-related health problems in other parts of China.

### **Cooperation in Earthquake Studies**

**Focus:** Earthquake Research

**Partners:** U.S. National Science Foundation, China Seismological Bureau, Chinese National Natural Science Foundation

**Schedule:** Initiated 1980, Targeted Completion (under current extension) 2005

Under the *Scientific and Technical Cooperation in Earth Science Protocol*, U.S. and Chinese partners have been cooperating in the fields of earthquake prediction, earthquake hazards evaluation, earthquake engineering, and other basic and applied studies of earthquake phenomena for 22 years. USGS has conducted workshops and provided training information in the areas of earthquake hazards, seismo-tectonics, and earthquake prediction.

### **World Coal Quality Inventory**

**Focus:** Energy Research

**Partners:** Institute of Geochemistry, Guiyang

**Status:** Ongoing

The Energy Resources Team of USGS is collaborating with researchers at the Institute of Geochemistry in Guiyang to acquire and characterize coal samples from a wide range of active coal mines throughout China. The detailed analysis of the coal, which includes determination of the concentration of all potentially toxic trace elements, will provide insights into the potential environmental and human health impacts of coal use in China. To date samples have been provided to USGS from about 500 coal mines in China. Ultimately, more than 1,000 samples will be analyzed.

### **Water Resources Discipline**

*In 1981, USGS and the Chinese Ministry of Water Resources signed the Surface-Water Hydrology Protocol. Extension of this protocol from 2001-2006 is currently pending. Below are descriptions current activities under this protocol*

#### **Study of Surface Water Hydrology**

**Focus:** Water Research

**Partners:** Hai He River Commission, Ministry of Water Resources

**Schedule:** Initiated 2001, Targeted Completion 2005

In October 2001, two USGS scientists visited China to conduct further discussions and initiate work on a reservoir eutrophication project. They discussed the study design for reservoir eutrophication and visited the field site where water quality and biological samples were collected for nitrogen isotope and algae species identification. The USGS scientists subsequently wrote a work plan, which was submitted to the Hai He River Commission. The current plan is for a Chinese delegation to visit the United States in 2002 to finalize the plan for the reservoir study. The Chinese delegation has agreed to pay for their travel expenses because of the current lack of USGS funding. The reservoir project will have two years of field data collection, followed by an interpretative report. It is anticipated that the final reports will be published as journal articles. The Administration of Foreign Experts Affairs will continue to provide out-of-country travel expenses for USGS scientists for this project.

### **U.S. TRADE AND DEVELOPMENT AGENCY**

<http://www.tda.gov>

#### **Feasibility Studies in China**

**Focus:** Energy and Environment Trade Studies

**Schedule:** Initiated 2001, Ongoing

The U.S. Trade and Development Agency (TDA) is an independent federal agency that promotes American private sector participation by helping U.S. companies pursue business opportunities in developing and middle-income countries. Through the funding of feasibility studies, orientation visits, specialized training grants, business workshops, and various forms of technical assistance, TDA helps American businesses compete for infrastructure projects in emerging markets. In addition, the agency promotes capacity-building initiatives and supports U.S. government trade, economic policy, and development objectives

around the world. Energy and environment are two of the areas in which TDA concentrates in China. The following are some of the activities undertaken since reopening in China in January 2001:

- **Air and Water Pollution Control Definitional Mission (DM):** The April 2001 DM identified three projects in air and/or water pollution for potential TDA grant assistance. Millennium Science & Engineering (MSE) was the contractor for this project. MSE also prepared air pollution project summaries for TDA's 4-6 June 2001 Asia Regional Air Pollution Conference. A final report has been submitted to TDA.
- **Water Projects Definitional Mission:** The July 2001 DM to Beijing, Shanghai, and Guangzhou identified water treatment and management projects suitable for TDA funding consideration in the Pearl River Delta region in southeastern China. The World Bank recently completed a sector report identifying this region as a high priority and has plans to finance projects within the area. A final report has been submitted to TDA.
- **Environmental Projects Definitional Mission:** TDA approved funding for a DM to Beijing, Shanghai, and Shenyang to evaluate six environmental projects. The potential projects cover environmental monitoring, vehicle emissions, and medical waste disposal. The DM took place in February 2002 and was performed by Brisea International Development, Inc.
- **Changzhou Wastewater Treatment Project:** TDA approved a feasibility study grant to the city of Changzhou for the construction of two wastewater treatment plants. The wastewater treatment plants will enhance the city's ability to mitigate severe water pollution problems and will improve downstream water quality by reducing the discharge of untreated water. The grant was signed in late September 2001. The engineering opportunity was competitively bid in the *Commerce Business Daily*.
- **Shandong Environmental Monitoring Project:** TDA approved a feasibility study grant to assist the Shandong Environmental Protection Bureau with an air and water pollution-monitoring plan for Shandong Province. The project will upgrade the city's environmental monitoring systems and laboratories to better monitor and address growing environmental problems in the province. The grant was signed in late July 2001. The opportunity was competitively bid in the *Commerce Business Daily*.
- **Shanghai Environmental Monitoring Project:** TDA approved a feasibility study grant for the Shanghai Environmental Protection Bureau to monitor air and water quality and to expand laboratory capabilities. Upgrading the city's monitoring systems yields more efficient ways of screening air and water quality. The grant was signed in late July 2001. The opportunity was competitively bid in the *Commerce Business Daily*.
- **PetroChina On-line Automatic Monitoring System Project:** TDA approved a feasibility study grant to partially fund a project that will allow PetroChina to improve its environmental standards by utilizing online automatic monitoring technology. The grant was signed in late July 2001.
- **Chongqing Wastewater Treatment Plant:** TDA has approved funding for a feasibility study of a 300,000-m<sup>3</sup>/day wastewater treatment plant along the Yangtze River in Chongqing. The grant was signed in March 2002.
- **Automatic Water Monitoring Technologies Business Briefing/Orientation Visit:** TDA funded a visit to familiarize key Chinese central and local government officials in charge of water quality monitoring projects with U.S. technology and expertise in real-time, automatic water quality monitoring technology. The event took place in January 2002.
- **Asia Regional Air Pollution Control Technology Conference:** On 4-6 June 2001 this conference was held in Hong Kong with the goal of matching U.S. technology and capabilities with Asian project sponsors interested in using air pollution control technology to meet economic and environmental protection goals. Chinese delegates participated in the conference and were presented with potential air pollution projects in China.
- **Power Sector Definitional Mission:** This DM to China identified three projects in clean coal power generation or alternate fuel utilization. Brooks Howell, Inc. was selected to conduct this DM. The final report has been submitted to TDA.
- **Oil and Natural Gas Definitional Mission:** International Development Planners conducted a DM to China in May 2001, in which three potential oil and gas development and refining (upstream and downstream) projects were identified for TDA grant assistance. The final report has been submitted to TDA.
- **Electric Power Definitional Mission:** The January 2002 DM worked with the Shanghai Municipal Electric Power Company as it restructures its generation, transmission, and distribution systems. The contractor also visited with the State Power Corporation in Beijing to identify projects in the electric power sector. The DM was performed by Commonwealth Power Corp.
- **Shenhua Direct Coal Liquefaction Project:** TDA is supporting Hydrocarbon Technologies, Inc. in developing the conversion of coal into clean transportation fuels and chemical feedstock. Shenhua Group (LTD) is the Chinese project sponsor for this activity. The grant was signed in late July 2001.
- **West-East Gas Pipeline Project:** TDA supported Houston based Universal Ensco's project management bid with a *de minimus* training grant offer to PetroChina. The grant agreement was signed in mid-September 2001. Construction of this 4,000-kilometer pipeline is planned to begin in 2001, with completion expected by June 2004.

## PART II. U.S. AND INTERNATIONAL NONGOVERNMENTAL ORGANIZATION ACTIVITIES

### ALLIANCE TO SAVE ENERGY

<http://www.ase.org>

**Ongoing Projects (See CES 4):** Energy Efficiency Seminars. See current entry under Export Council for Energy Efficiency for International Energy Efficiency Technology Assistance Program

### ASIA FOUNDATION

<http://www.asiafoundation.org>

#### Hong Kong Cleaner Vehicles and Fuels Project

**Focus:** Air Quality Policy

**Partners:** Civic Exchange (Hong Kong NGO)

**Funding:** \$90,000 (Lee Hysan Foundation, Hong Kong)

**Schedule:** Initiated October 2000, Completed August 2001, New Phase Currently in Development

This project aims to develop a practical and effective cleaner fuel and vehicle strategy for Hong Kong by focusing on vehicular emissions. Instead of the traditional model of creating dialogue only involving governmental authorities and business elites, this project will engage a much broader range of stakeholders in order to identify solutions and build confidence within public policy circles. The overall objective of this program is to enlist and encourage Hong Kong and U.S. experts and stakeholders to develop a strategy that would assess the technical, financial, and political feasibility of introducing cleaner fuels and vehicles to Hong Kong, and plan an appropriate course of action. If successful, the project will lead to important expanded opportunities for cleaner vehicles in Hong Kong. The specific objectives include: (1) a review of technological developments of clean fuels and vehicles worldwide; (2) discussions with local and overseas officials and experts, local vehicle manufacturer representatives, oil and power companies, and transport operators; (3) circulation of a range of options for comments; (4) designing, facilitating, and conducting the follow-up of a multi-stakeholder workshop; and eventually, (5) finalizing, publishing, and distributing the cleaner fuels and vehicles strategy.

### ASIA SOCIETY

<http://www.asiasociety.org>

#### China Meetings

**Focus:** Environmental Research

**Schedule:** Ongoing

Asia Society has sponsored numerous meetings and discussions focusing on various aspects of China's environment. Notably, Asia Society hosted: (1) "Urbanization and the Future of China's Environment," featuring Kebin He, professor in the Air Pollution Division in the Department of Environmental Science and Engineering and the principal investigator and organizer of a series of research projects for urban transportation-related air pollution that resulted in national technical policy on vehicular air pollution control, new emissions standards, and regulations issued by SEPA and Beijing EPB; (2) Judith Shapiro presented a lecture based on her book, *Mao's Against Nature: Politics and the Environment in Revolutionary China*, examining how the legacy of the Mao period continues to cloud China's efforts to resolve its severe environmental problems; (3) "The Future of Asia's Nature and Culture" was a panel discussion of the significant development issues facing Asia and their impact on natural and cultural preservation in the region; (4) while "The WTO and China's Agriculture" looked into the implications and impact of China's WTO entry on the countryside, (which is home to 90 percent of the country's population) and how WTO membership will help or hinder the commercial and environmental challenges facing China's agricultural sector.

### THE ATLANTIC COUNCIL OF THE UNITED STATES

<http://www.acus.org>

#### Clean Air for China and India

**Focus:** Air Quality Policy, Energy Policy

**Partners:** Committee for Energy Policy Promotion of Japan, Confederation of Indian Industry, and South-

North Institute for Sustainable Development (Chinese NGO)

**Funding:** (\$100,000) U.S. Department of Energy, National Energy Technology Laboratory

**Schedule:** Initiated 2000, Targeted Completion 2003

The objective of this project is to develop consensus recommendations on a quadripartite basis (China, India, Japan, and the United States) for economic and energy policies that will contribute to reducing air pollution associated with energy use in China and India. The audience for the recommendations will be government policymakers and decision-makers in the private sector in the four countries noted. During year one, the project activities focused on developing Chinese and Indian views on energy and air pollution, as well as possible policies and actions. In the coming year and a half, seminars to discuss policy options will be held in Beijing and New Delhi. A policy paper then will be developed on a consensus basis by a group of 20 to 30 experts (an equal number from each country). The final recommendations will be disseminated to the public and private sectors in the four countries.

### CARNEGIE COUNCIL ON ETHICS AND INTERNATIONAL AFFAIRS

<http://www.carnegiecouncil.org/themes/environment.html>

**Ongoing Projects (See CES 4):** Understanding Values: A Comparative Study of Values in Environmental Policymaking in China, India, Japan, and the United States

### CENTER FOR CLEAN AIR POLICY

<http://www.ccap.org>

### Energy Conservation and Greenhouse Gas Emissions Reduction Opportunities in Township and Village Enterprises

**Focus:** Environmental Management, Air Quality Policy

**Funding:** United Nation Development Programme, United National Industrial Development Organization

**Schedule:** Initiated 1999, Phase I Completed, Phase II Ongoing

While China's rural township and village enterprises (TVEs) contribute considerably to economic growth and social welfare benefits, they also create a significant amount of local environmental problems. This project aims to reduce greenhouse gas emissions from the TVE sector by increasing the utilization of energy-efficient technologies and products in the brick, cement, metal casting, and coking industries. The project removes key market, policy, technological, and financial barriers to clean technologies to reach these goals. The Center for Clean Air Policy (CCAP) served as the chief technical advisor during Phase I, which aimed to: (1) create institutional mechanisms for barrier removal at the national, county, and enterprise level; (2) establish incentive and monitoring systems to strengthen existing energy-efficiency regulatory programs at the county level; (3) build technical capacity for energy efficiency and product quality improvement in TVEs; (4) create access to commercial financing for TVEs in the four industries; (5) commercialize the financing of TVE energy conservation projects; and (6) expand the application of best practices for local regulatory reform to the national level. Based on the foundational work completed in Phase I, Phase II is currently being implemented in China.

### Human Health Benefits of Air Pollution Strategies in Shanghai

**Focus:** Health Research, Energy Policy

**Partners:** Argonne National Laboratory, University of Iowa

**Funding:** Argonne National Laboratory

**Schedule:** Initiated 2000, Completed 2001

In collaboration with Argonne National Laboratory of U.S. DOE and the University of Iowa, CCAP examined and performed a cost-benefit analysis of pollution control in the city of Shanghai. The study took an integrated approach that links the emission sources, the ambient distributions, and the human exposures of key pollutants—PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>—from fossil combustion sources in the city. CCAP and its partners: (1) developed an emissions inventory; (2) created an air dispersion model; and (3) undertook a health analysis of Shanghai. Utilizing these three components, CCAP suggested three scenarios to control emissions from the power, industry, and transportation sectors. CCAP also evaluated the human health implications of implementing these air pollution control measures. A risk assessment method then was applied to evaluate the human exposure risks as well as the potential health improvements of pollution control expressed with various health endpoints (e.g., acute mortality, chronic pulmonary disease, and hospital and emergency room visits). The health benefits of the control scenarios were estimated in economic terms using economic valuation methods (e.g., willingness-to-pay and cost-of-illness) to compare with the cost-effectiveness of the alternative control measures. The study showed large benefit-to-cost ratios for these new strategies and

therefore provided economic grounds for supporting investments in pollution control in cities like Shanghai in the developing world. A paper based on the study has been published in the journal *Environment Management*.

## CENTER FOR RESOURCE SOLUTIONS

<http://www.resource-solutions.org>

### **Assistance for Renewable Energy Policymaking**

**Focus:** Energy Policy

**Partners:** State Development Planning Commission (SDPC)

**Funding:** Energy Foundation

**Schedule:** Initiated 1999, Ongoing

For the past two years, the Center for Resource Solutions (CRS) has provided assistance to SDPC's Center for Renewable Energy Development (CRED) with research and analysis on renewable energy policies. This work ranged from drafting potential legislation for a renewable portfolio standard (RPS) to assessing the international experience of systems benefit charges that may prove valuable and applicable to China. Much of the CRS analysis was used by CRED to create an RPS policy statement in the Tenth Five-Year Plan. During 2002, CRS will continue this effort to develop a long-term and effective national renewable energy program. The next steps include providing assistance by analyzing relevant international experiences in other policy areas, and by assessing the political and economic impacts of various policies on China's renewable energy development.

### **Green Market Development**

**Focus:** Energy Research

**Partners:** South-North Institute for Sustainable Development (SNISD)

**Funding:** Energy Foundation

**Schedule:** Ongoing (Project implementation stage in Beijing; feasibility investigation stage for Shanghai)

To reach the goal of presenting the world "a capital city with blue skies, clear water and green landscapes" during the Beijing Olympics in 2008, the Chinese government already has spent \$3.6 billion to clean up Beijing and has committed another \$8.6 billion to be spent over the next five years. To capitalize on the momentum of the greening Beijing movement, CRS proposed several tasks to integrate renewable policies and markets into the 2008 Olympics programs. In 2001, SNISD surveyed large businesses in Beijing on attitudes toward and preferences for renewable electricity. The results were overwhelmingly positive—businesses showed a strong preference for renewable electricity and expressed a willingness to pay a slight premium for renewable power. CRS will assist SNISD to take this market research to the next level by conducting additional surveys in other cities and developing a pilot green power marketing initiative to market renewable power among Chinese businesses in Beijing and possibly Shanghai.

### **Off-Grid Renewable Energy Development**

**Focus:** Energy Policy

**Partners:** China Energy Research Society (CERS), China Association of Rural Energy Industry

**Funding:** Energy Foundation

**Schedule:** Ongoing

By the end of 1995, 850 million people lived in the rural areas of China, which occupy 7 percent of the total cultivated lands of the world. Rural energy demand for electricity continues to grow as farmers' incomes increase and township and village enterprises rapidly develop. CRS will work with the China Energy Research Society (CERS) and the China Association of Rural Energy Industry to examine current policies promoting renewable energy in rural communities, as well as to provide recommendations for revisions and new policies. CRS also will review and edit the draft CERS reports for publication, and assist in implementing recommended policies and programs.

### **Public Benefits Fund and Other Renewable Energy Policy Support**

**Focus:** Energy Policy

**Partners:** Center for Renewable Energy Development (CRED), SDPC, ERI, Guangdong Energy Techno Economic Research Center

**Funding:** Energy Foundation

**Schedule:** Initiated 2001, Ongoing

Over the past year, CRS has provided expert assistance to CRED and SDPC on the use of public policy to reach renewable

energy goals by focusing on the use of systems benefits charges (also called public benefits fund) and renewable portfolio standards. CRS will continue to provide information on these and other policies and will promote analysis to better understand the disadvantages and benefits of a wide range of renewable energy and energy efficiency policies used in Europe and the United States.

### **Wind Concession Project**

**Focus:** Energy Research

**Partners:** National Renewable Energy Laboratory (NREL), Tsinghua University, Guangdong Energy Techno Economic Research Center

**Funding:** Energy Foundation

**Schedule:** Initiated 2001, Ongoing

CRS and NREL organized their first Wind Concession Workshop in China in 2001. The wind concession project, which is partially headed by experts from Tsinghua University, aims to establish wind concession rights for bidding by private companies. CRS will provide expert assistance on: (1) power purchase agreements; (2) the relationship between specific contract terms and conditions; and (3) the ability to finance wind projects.

### **Wind Policy**

**Focus:** Energy Policy

**Partners:** SETC, SDPC, Ministry of Science and Technology (MOST)

**Funding:** Energy Foundation

**Schedule:** Initiated 2001, Ongoing

In 2001, CRS assisted a joint working group on a draft document outlining a draft framework for wind policy in China. CRS reviewed and commented on the SETC/SDPC/MOST draft wind policy framework report, which will be published in English in 2002. CRS also will identify areas of follow-up activity for wind policies in 2002. Follow-up activities include provincial implementation of pilot policies and programs, such as: (1) a new wind pricing policy for existing wind contracts; and (2) alternative tax treatment of wind equipment and facilities that can improve the incentives for wind energy investments.

### **CONSERVATION INTERNATIONAL**

<http://www.conservation.org>

### **Hengduan Mountains Hotspot**

**Focus:** Biodiversity Research, Conservation Management

**Partners:** Sichuan Provincial Planning Committee, Chengdu Institute of Biology (CIB), Sichuan Department of Forestry, Institute of Human Ecology (IHE)

**Funding:** Critical Ecosystem Partnership Fund (CEPF), Center for Environmental Leadership in Business (CELB), Center for Applied Biodiversity Science (CABS)

**Schedule:** Initiated 2000, Targeted Completion 2005

The overall goal of Conservation International's (CI) Hengduan Mountain project is to strengthen the management of selected nature reserves in the region. There are six major components of CI's conservation work in this mountainous region of Sichuan Province: (1) ecosystem profiling; (2) networking and coordinating with transnational organizations; (3) regional planning; (4) nature reserve management; (5) monitoring and assessment; and (6) green business. In order to build on CI's foundational work with the Sichuan provincial government, in March 2002, CI, World Wide Fund for Nature (WWF), and The Nature Conservancy (TNC) organized a conservation priority-setting workshop in Chengdu, attended by over 60 Chinese and foreign scientists. The goal of this meeting was to identify biological priorities and discuss conservation strategies across a region of interest covering CI's Hengduan Mountains Hotspot and WWF's Forest of the Upper Yangtze Eco-region. The workshop followed a meeting hosted by the Chengdu Institute of Biology (CIB)—which was sponsored by IUCN and CI—to review maps and data for the China portion of IUCN's Global Amphibian Project. CI will set up a representative office in Chengdu to manage and implement the projects in Hengduan Mountains.

### **ECOLOGIA (ECOLOGISTS LINKED FOR ORGANIZING GRASSROOTS INITIATIVES AND ACTION)**

<http://www.ecologia.org>

## **China Environmental Management Systems Project**

**Focus:** Environmental Management

**Partners:** China Accreditation Committee for EMS Certification, local institutes, companies and environmental groups in China

**Funding:** Rockefeller Brothers Fund, Goldman Fund

**Schedule:** Initiated 2001, Ongoing

ECOLOGIA's China environmental management systems (EMS) project seeks to work with members of China's business, government, and nonprofit sectors to promote the use of environmental management principles as a tool for sustainable development. Together with its Chinese partners, ECOLOGIA is initiating EMS workshops and exchanges that reach out to Chinese businesses. ECOLOGIA has successfully undertaken similar work in Russia and Eastern Europe, and has participated in the development of international environmental management and communications standards in these areas.

## **Virtual Foundation and Small Grants Program**

**Focus:** Environmental Capacity Building

**Partners:** Environmental Volunteers Association of Sichuan University (Chengdu), Green Earth Volunteers (Beijing)

**Funding:** Ford Foundation, Trace Foundation, individual donors

**Schedule:** Initiated 1997, Ongoing

ECOLOGIA provides direct small grants (under \$3,000) to NGOs and community groups initiating environmental, sustainable development, and human health projects in China. Projects that assist in the development of NGO capacity while solving concrete local problems are given priority. ECOLOGIA's Virtual Foundation Web site ([www.virtualfoundation.org](http://www.virtualfoundation.org)) is used to match grant applicants with foreign organizations and individuals interested in supporting community projects in China.

## **ECOLOGY AND CULTURE ORGANIZATION**

Wang Xiaogang, [startrekking@hotmail.com](mailto:startrekking@hotmail.com)

## **Educational Development Project**

**Focus:** Education Development

**Partners:** Gongshan Local Government, *Ming Pao Weekly*

**Funding:** Private donations, *Ming Pao Weekly*

**Schedule:** Initiated 2000, Targeted Completion 2010

The Ecology and Culture Organization (ECO) has made a special agreement with *Ming Pao Weekly* in Hong Kong to cosponsor a development project in the Gongshan area (Northwest Yunnan, Nujiang Prefecture). Projects are proposed and managed by ECO while *Ming Pao Weekly* provides the funds. After initial projects for the benefit of the poorest students in Gongshan during 2001, the project was extended in 2002 to include: (1) help for the poorest students and orphans to attend school in favorable conditions; (2) maintenance and repairs of school buildings for a suitable educational environment; and (3) improved education methods through training for local teachers by experienced teachers from outside the valley, and workshops to exchange thoughts and experiences on teaching techniques. This project is part of larger sustainable development projects in Gongshan (see Rural and Economic Development Project below).

## **Environmental and Rural Development Project in North Gaoligong Mountain: Phase I Mountain Trail Clean Up**

**Focus:** Conservation Capacity Building, Environmental Education

**Partners:** Gongshan Environmental Protection Bureau, local schools

**Funding:** ECOLOGIA, internal finance

**Schedule:** Initiated 2001, Targeted Completion 2002

The project aims to raise local people's conservation awareness and call attention to the global pollution problem through restoring a mountain trail in the Dulong Valley. Local government representatives, as well as teachers and students from different schools in the area are invited to attend a workshop on environmental education principles and to participate actively in this "Clean Up Week in the Nature." This experience will provide local people opportunities to appreciate their homeland together with a focus of environmental preservation.

### Rural and Economic Development

**Focus:** Biodiversity

**Partners:** Yunnan University, Life Science and Chemistry Department; Southwest School of Forestry; Gongshan Environmental Protection Bureau

**Funding:** Internal funding

**Schedule:** Initiated 2002, Targeted Completion 2007

This project aims to protect the endangered botanical species found in mountains and to experiment cultivating such species in the Gongshan area. The scientific research and supervision of this botanical species cultivation also will include the involvement and training of the local people. The selling of these botanical resources will directly profit villagers where the species will be grown. The primary focus of this project will be using the special botanical resources of the area to produce Chinese medicine. A secondary focus will be to promote access to the North Gaoligong Mountain natural resources by developing trails in the area, and training local people to lead eco-tours. In order to become tour guides local citizens will need to acquire deeper knowledge of their natural environment, history, and geography. This project will both help local communities improve their living conditions and allow them to remain in their native villages instead of leaving for better living conditions in outside townships.

### ENVIRONMENTAL DEFENSE

<http://www.environmentaldefense.org>

### Total Emissions Control and Emission Trading in China

**Focus:** Air Quality Policy

**Partners:** Chinese Association for NGO Cooperation; Beijing Environment and Development Institute; State Environmental Protection Administration (SEPA); Regional Environmental Protection Bureaus (EPBs) of Shandong, Shanxi, Jiangsu, and Henan Provinces; EPBs of Shanghai, Tianjin, and Liuzhou Municipalities; State Power Corporation and its subsidiaries; Peking University

**Funding:** CV Starr Foundation Grant, Environmental Defense general support

**Schedule:** Initiated 1997, Targeted Completion 2005

Environmental Defense is currently undertaking a project to develop strategies for implementing China's total emissions control (TEC) policy. It is the goal of SEPA to control total SO<sub>2</sub> emissions by 2005 at 80 to 90 percent of their 2000 levels. Environmental Defense has been working closely with different related departments of SEPA to examine implementation policy alternatives to help SEPA achieve this goal, with emphasis on the application of market-based instruments (MBIs). Phase I of the project focused on understanding the present state and evolving process of TEC, and identifying the main obstacles in policymaking and implementation of the TEC policy. The work of this phase is completed and summarized in a book titled *Total Emission Control and Emission Trading* (Ma Zhong and Dan Dudek, 1999), which is the first such book in China. Phase II was focused on the exploration of solutions to key obstacles identified in Phase I and experimentation with MBIs at the local level. Two pilot cities were selected for the study: Benxi, a highly industrialized northern city dominated by state-owned enterprises; and Nantong, a fast growing southern coastal city trying to balance its economic growth and environmental quality. In Benxi, Environmental Defense partnered with Benxi EPB to develop local cap and trade legislation to control sulfur dioxide emissions. In Nantong, Environmental Defense and its local partner the Nantong EPB developed a genuine emission trade between a power plant and a light manufacturing facility. The trade was labeled in the Chinese news media as the "first real SO<sub>2</sub> emission trade."

During ongoing Phase III work, in cooperation with SEPA, Environmental Defense is partnering with leading universities and research institutes to: (1) develop long-term SO<sub>2</sub> control targets for the power sector and demonstrate emission trades between power plants; (2) develop consistent allocation, permit management, and emission trading mechanisms in four provinces and three cities; and (3) review new project approval procedures and their integration with MBIs. It is the expectation of Environmental Defense that the outputs of these projects will help SEPA develop integrated and consistent SO<sub>2</sub> management policies to achieve the national SO<sub>2</sub> control target during the Tenth Five-Year Plan period (2001-2005). Environmental Defense also is assisting in the formation of a nationwide emission trading network that specializes in the training, information dissemination, and promotion of MBIs through: (1) news media outreach; (2) the internet; (3) working with other government agencies; and (4) joint training programs with universities and other organizations.

### EXPORT COUNCIL FOR ENERGY EFFICIENCY

<http://www.ecee.org>



## **International Energy Efficiency Technology Assistance Program**

**Focus:** Energy Efficiency Education

**Partners:** Alliance to Save Energy (ASE), International Institute for Energy Conservation (IIEC), U.S. National Association of Energy Service Companies, U.S. National Association of State Energy Officials (NASEO), Solar Energy Research and Education Foundation, China Energy Conservation Association, Shanghai Energy Conservation Center (SECC), China State Power Corporation-Demand Side Management Center, Shandong Province Economic and Trade Commission, Beijing Energy Conservation Center

**Funding:** U.S. Department of Energy

**Schedule:** Initiated 1994, Targeted Completion 2002 (extension pending additional funding)

Since 1997, the Export Council for Energy Efficiency (ECEE), together with its partner organizations, has organized a series of seminars and peer exchanges to promote awareness of energy efficiency in both the public and private sectors in China. Some of the past and ongoing programming is reviewed below. Copies of quarterly reports with details about these meetings can be requested from Ginny Leikam ([ginny@ecee.org](mailto:ginny@ecee.org)) or Laura Gubisch ([laura@ecee.org](mailto:laura@ecee.org)).

- Building upon the success of the policy and program seminar in October 2000, NASEO worked with DoE, APEC's Energy Efficiency Working Group, and the SECC for a second policy forum focused on public buildings programs.
- In January 2002, NASEO also held a 3-day meeting for 30+ mayors on community sustainable energy planning in Wuhan.
- In September 2001, NASEO organized a seminar in partnership with the SECC on energy service company (ESCO) project development, with energy management companies in China. Immediately following—in collaboration with the World Bank—NASEO organized a workshop to lay the groundwork for forming an ESCO association in China.
- Upcoming EEEEC activities include the Alliance to Save Energy's twelfth energy efficiency seminar in China. The seminar, planned for June 2002, will be organized in cooperation with the State Economic and Trade Commission's Energy Conservation Information Dissemination Center and the Sichuan Energy Conservation Supervision Center. The seminar will focus on energy managers in Chengdu (Sichuan Province). Some of the main topics will include: (1) lighting, (2) HVAC systems, (3) steam and hot water generation and distribution, (4) motors, drives, and controls.

## **INSTITUTE FOR TRANSPORTATION AND DEVELOPMENT POLICY**

<http://www.itdp.org>

### **Supporting Pilot Bus Prioritization and Pedestrian Facilities**

**Focus:** Transportation Policy, Transportation Research

**Partners:** Guangzhou Transportation Planning Research Institute, South China University, Guangdong Consumers Council, The World Bank

**Funding:** Rockefeller Brothers Fund

**Schedule:** Initiated 2000, Ongoing

The Institute for Transportation and Development Policy (ITDP) has been working closely with the Guangzhou Transportation Planning Research Institute. Together they have organized several workshops to train municipal officials how better to integrate the needs of pedestrians into the transportation system. ITDP also has conducted an independent review of the effectiveness of the World Bank's City Center Transport Project. Led by Enrique Penalosa, the former Mayor of Bogota, ITDP and the World Bank hosted a workshop on bus rapid transit in China. ITDP now is working with Guangzhou municipality to help identify a pilot bus way corridor and methods how to permanently pedestrianize two areas in order to improve tourism in the city.

## **INTERNATIONAL CRANE FOUNDATION, CHINA PROGRAM**

<http://www.icf.org>

**Ongoing Projects (See CES 4):** Conservation of Globally Significant Wetlands Used by Siberian Cranes; Environmental Summer Camp Exchange Between Russia and China; Integrating Conservation with Rural Development at Cao Hai Nature Reserve; Protection of Black-Necked Cranes in Agricultural Areas of South-Central Tibet; and Publication of China Crane News; Studies of Waterbirds, Water Levels, and Aquatic Food Plants as a Basis for the Conservation of Threatened Wetlands at Poyang Lake

### **Coordinated Crane County in Yunnan/Guizhou Plateau**

**Focus:** Conservation Research

**Partners:** Forestry Bureau of Yunnan Province

**Funding:** ICF Member Donations

**Schedule:** Initiated 2001, Targeted Completion 2003

The Yunnan/Guizhou Plateau consists of two wintering regions for the black-necked crane: western and northeastern Yunnan, and northwestern Guizhou. These two regions support 1400 to 1700 black-necked cranes. The counts for the black-necked cranes, however, have not been accurate due to the remoteness of the region and lack of efficient communication among the sites. ICF is planning to conduct coordinated crane counts for three consecutive years (2001-2003), and this project will help to determine the number of black-necked cranes wintering in this region. Three other major water birds, the common cranes, the bar-headed geese, and the ruddy shelducks wintering in this region also will be counted through this project.

### INTERNATIONAL FUND FOR ANIMAL WELFARE

<http://www.ifaw.org>

*(Editor's Note: For information on an IFAW presentation at the Wilson Center, see 5 September 2001 Meeting Summary in this volume of the China Environment Series)*

### Asian Elephant Habitat Conservation and Community Development Project

**Focus:** Conservation Management

**Partners:** Wildlife Division of Simao Prefecture Forestry Bureau, Forestry Department of Yunnan Province, Institute of Ecology at Beijing Normal University, U.S. Fish and Wildlife Service

**Funding:** International Fund for Animal Welfare (IFAW), U.S. Fish and Wildlife Service

**Schedule:** Initiated 1999, Targeted Completion 2003

To address the human-elephant conflict in the Simao area of Yunnan, in July 2000 IFAW initiated the Asian Elephant Project. Instead of the conventional compensation mechanism, which passively addresses the demand of local villagers, IFAW provides funding to local governments to develop community economic programs in order to ease the pressure on farmers caused by elephant activities. By providing micro-credit loan assistance to the rural communities in Simao, the project encourages local farmers to actively seek alternative farming methods and to reduce agricultural activities in the forest. The education component of the project includes training of farming techniques, human safety awareness, wildlife protection and habitat conservation. Research has revealed that the construction of salt licks in the forest can attract elephants away from crops. This research is being used to initiate a new protection area and ecological corridors for elephants in Simao.

### Beijing Raptor Rescue Center

**Focus:** Conservation Management, Environmental Law

**Partners:** Beijing Normal University, Beijing Forestry Bureau, International Bird Rescue and Research Center (California), California Raptor Center (UC Davis), Kadorie Farm and Botanic Garden (Hong Kong), Beijing Zoo

**Funding:** International Fund for Animal Welfare

**Schedule:** Initiated 2000, Ongoing

Realizing the urgent need to establish good models of wildlife rescue and rehabilitation practices in China, IFAW provided initial funding to build the first raptor rescue and rehabilitation center on the campus of Beijing Normal University. The Beijing Raptor Rescue Center officially opened in December 2001 with permits granted by the Beijing Forestry Bureau. The center is designed as a nonprofit wildlife rehabilitation center, aiming to promote the highest standards of animal welfare by incorporating the most current technology and best animal husbandry techniques to rescue, care, rehabilitate, and release wild raptors injured or those that had come into contact with humans in and around the Beijing municipal area. A central mission of the center is to acquaint rescue and rehabilitation personnel with the most up-to-date animal care technology and animal welfare understanding.

### China Bear Campaign

**Focus:** Conservation Management, Environmental Education

**Partners:** State Forestry Administration of China, China Wildlife Conservation Association, CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) China, Beijing University of Traditional Chinese Medicine, Animals Asia Foundation (Hong Kong)

**Funding:** International Fund for Animal Welfare (IFAW)

**Schedule:** Initiated 1996, Ongoing

IFAW initiated this project by investigating Chinese bear farms and publicizing the terrible conditions in which over 10,000 Asiatic black bears were caged. These bears lived in cages with metal catheters inserted into their stomach for the production of bile, used as an ingredient in Chinese traditional medicine. This project kicked off a worldwide campaign that brought mounting pressure from outside and within China to solve the problem. In 1996, IFAW established the first bear sanctuary in China in which 7 former “farmed” bears will peacefully live out the rest of their lives. IFAW funded a public opinion poll and survey on bear bile market in 1998 and 1999, respectively. The results of these surveys showed that the demand for bear bile in China is limited and that more education of consumers is needed to raise the awareness of the mistreatment of bears. IFAW is therefore utilizing continued bear bile alternative research and is increasing education efforts to target consumers, traditional Chinese medicine practitioners, and international travelers about CITES regulations and consumer responsibilities.

**CITES Education and Awareness****Focus:** Environmental Capacity Building, Environmental Education**Partners:** CITES China, provincial CITES offices**Funding:** International Fund for Animal Welfare**Schedule:** Initiated 1999, Targeted Completion in 2002

To educate travelers about the threat illegal animal trade poses for China’s biodiversity, IFAW initially collaborated with CITES Yunnan branch to install the first education billboard in the departure lounge of the Kunming International Airport in 1999. Similar billboards are now installed in Shanghai and Beijing airports. Brochures in Chinese titled “Love Nature, Respect Life,” educating travelers about CITES regulations were distributed to all fourteen CITES offices around China. Another component of this project was to adapt and translate the wildlife crime enforcement guide that had been published by Indian wildlife experts. The book will be printed in 2002 for CITES and customs enforcement personnel training. Currently, education efforts are targeting Duty Free shops in China’s international airports, many of which sell products made from endangered species, which is a direct violation of CITES.

**Humane Education****Focus:** Environmental Education**Partners:** Beijing Man and Animal Environment Education Center, Friends of Nature, numerous schools and children’s activity centers around China**Funding:** International Fund for Animal Welfare (IFAW)**Schedule:** Initiated 1997, Ongoing

As the only international animal welfare organization in China, IFAW has initiated a series of educational activities to foster a humane environment for animals. IFAW organized and facilitated animal welfare conferences in China, bringing relevant groups, individuals, and government officials together to share the latest animal care techniques, animal welfare knowledge and information about anti-cruelty legislation. One education initiative—the Animal Action Week—successfully motivated 120,000 children to do kind acts for animals in 2001. Several books were published in Chinese to educate children about proper care for companion animals, compassion towards all living things, kind and ethical behavior toward animals in zoos and wildlife parks and the capacity of individuals to stop cruelty to animals. IFAW also funds local university student groups in carrying out conservation and animal welfare activities, sponsoring Green Camps and establishing Green Libraries, which are two projects operated by the Green Student Forum. With the help of Friends of Nature (FON), animal welfare education is brought to remote areas and communities using FON’s mobile classrooms.

**Pet Rescue (Companion Animal Welfare)****Focus:** Environmental Education**Partners:** Beijing Agriculture University, College of Law at China Technology University**Funding:** IFAW, Royal Society for the Prevention of Cruelty to Animals (United Kingdom)**Schedule:** Initiated 1993, Ongoing

IFAW’s Pet Rescue project funds organizations that: (1) shelter companion animals; (2) provide veterinary care and spay/neuter programs; (3) conduct responsible pet ownership education; and (4) advocate for more humane policies for companion animals. In China, pet rescue grants have supported numerous groups and shelters since 1993. IFAW provides both technical and animal welfare training to Chinese veterinarians, and encourages them to work closely and ethically with shelters and pet owners. IFAW supported the establishment of Beijing Man and Animal Environment Education Center, a companion animal shelter, and helped refine its management protocols. Writing directly to local governments and protesting practices and regulations cruel to

companion animals, IFAW was able to stop several “dog eradication campaigns” held throughout China and IFAW continues to lobby the Beijing municipal government for a more humane and workable dog management policy that will protect the welfare of animals as well as promote the image of Beijing in preparation for the 2008 Olympic Games.

### **Tibetan Antelope Campaign**

**Focus:** Conservation Management

**Partners:** CITES China, State Forestry Police of China, SEPA, Nature Reserves in Qiang Tang, Kekexili, and Arjin Shan, Green River, IFAW-UK, Wildlife Trust of India, London Metropolitan Police

**Funding:** International Fund for Animal Welfare (IFAW)

**Schedule:** Initiated 1998, Targeted Completion 2003

In light of the increasing slaughter of Tibetan antelopes in China, IFAW created a strategy to conserve this endemic species in the remote Qinghai-Tibet Plateau by funding anti-poaching patrols inside China. As part of this Tibetan antelope campaign, IFAW also is: (1) initiating trade investigations; (2) organizing consumer awareness campaigns; and (3) supporting CITES enforcement in ranging, transporting, and consuming countries. In China, IFAW provided patrol equipment, supplies, and funding to various anti-poaching agencies and nature reserves within the Tibetan antelope range. With the help of local agencies, various conservation education materials in the local language are distributed in the region. In May 2001, IFAW and the State Forestry Police jointly held the first intelligence sharing at a CITES training workshop at the Police Academy in Nanjing, which brought together 30 officers from Tibet, Qinghai, and Xinjiang. Outside China, a major consumer awareness and CITES enforcement campaign is picking up speed in India and Europe, with more consumers aware of the deadly “shahtoosh trade” and more confiscation of wool and shahtoosh products by local enforcement agencies. IFAW believes this consumer campaign component is crucial, for if the buying stops so will the killing.

### **INTERNATIONAL FUND FOR CHINA’S ENVIRONMENT**

<http://www.ifce.org>

### **Demonstration Project on Family-based Ecological Yards in Western China**

**Focus:** Energy Training

**Partner:** Yan An Municipal Government, Shaanxi Province

**Schedule:** Targeted Initiation September 2002

The project will provide technical training to 30 farmer families on the construction of family-based ecological yards. The centerpiece of this technology is the use of biogas. Through utilization of animal wastes to generate biogas, the surrounding environment of farmer houses will be much cleaner. The use of biogas also will reduce pressure on surrounding woods and vegetation. The residues in the biogas pond can be used to fertilize vegetables in greenhouses, which can be sold to generate cash for the families. Implementation of such practical technologies will be key to ecological restoration in western China.

### **Development of Watershed Management Planning Report in Cao Hai, Guizhou Province**

**Focus:** Watershed Management

This project aims to help the Guizhou EPB to develop a management plan for Cao Hai Lake, a national reserve for rare black-necked cranes in China. IFCE will organize a multidisciplinary team consisting of U.S. experts to conduct a 5-day survey to Cao Hai and develop a recommendation report for watershed planning and management. The expert team includes professors, research scientists, and field professionals from the private and research sectors. The team also will visit Wuhan after the Guizhou visit to discuss general water resources management problems in central China.

### **Environmental Technological Delegation to Chongqing and Wuhan**

**Focus:** Environmental Management

**Partners:** The Center for East Asian & Pacific Studies at the University of Illinois Urban/Champaign

**Schedule:** Targeted Initiation May 2002

(1) introduce the latest environmental technologies and management methods in the United States; (2) discuss and understand the practical environmental problems and projects in Chongqing and Wuhan cities; and (3) explore and discuss possible cooperative consulting or research projects.

### **Pilot Project to Recycle Obsolete Computers and Support Science Education in Western China**

**Partners:** Hewlett Packard, Chinese Ministry of Education

**Focus:** Environmental Education

**Funding:** Hewlett Packard (pending)

**Schedule:** Targeted Initiation October 2002

The project will recycle obsolete computers and provide them to needy schools in western China. IFCE will collect and recycle 2,000 computers from governmental agencies and large firms in China. Technical staff identified by each individual school will be trained to use these computers. Training for future trainers will be provided in order to make more efficient use of the equipment.

### **U.S. Environmental Trade Delegation to China**

(Environmental Export Council, The Center for Sustainable Environment, Energy and Economics in Shanghai, China)

**Focus:** Environmental Policy

**Funding:** Individual environmental firms

**Schedule:** Targeted Initiation July 2002

This trade mission is designed to promote U.S. environmental companies possessing the technologies, goods, and services that can meet the needs of government and private sector investors in two major cities: Shanghai and Chongqing. In addition to planning government contacts, participating companies will have an opportunity to meet executives of Chinese environmental companies to discuss new business opportunities. The delegation will meet with senior officials, environmental administrators, economic development officers, technical and management staff of environmental enterprises, as well as potential investors to understand the needs and discuss possible cooperative projects and joint ventures. The delegation will also meet U.S. commercial officials at the U.S. consulate in Shanghai during the visit.

### **INTERNATIONAL RIVERS NETWORK**

<http://www.irn.org>     <http://www.chinarivers.org> (Chinese)

### **Campaign for Living Rivers in China**

**Focus:** Environmental Education

**Funding:** Foundation for Deep Ecology

**Schedule:** Initiated 1997, Ongoing

International Rivers Network (IRN) works to increase public awareness of the environmental, social, economic impacts of large dams and to advance more sustainable options to large hydro projects. IRN supports grassroots initiatives to revive ecological and cultural awareness of rivers. Internationally, IRN works to impede public- and private-sector capital flows to dam projects, such as the Three Gorges Project, that fail to meet the guidelines of the World Commission on Dams. To register for a free information list serve on dams, water, and energy issues in China, email [irn@irn.org](mailto:irn@irn.org).

### **INTERNATIONAL SNOW LEOPARD TRUST**

<http://www.snowleopard.org>

**Ongoing Projects (See CES 4):** Conservation of the Snow Leopard and its Mountain Habitat

### **IUCN—THE WORLD CONSERVATION UNION**

<http://www.iucn.org>

### **China Programs**

**Focus:** Environmental Research, Environmental Management

**Partners:** Center for Biodiversity and Indigenous Knowledge, Yunnan Academia Sinica; China Wildlife Conservation Association; Hong Kong Zoological and Botanical Gardens; Institute of Botany, Academia Sinica; Chinese Ministry of Foreign Affairs; Nanjing Institute for Environmental Sciences; The Agriculture, Fisheries and Conservation Department of the Hong Kong SAR; The Institute of Zoology, Academia Sinica; SEPA; State Forestry Administration; World Wide Fund for Nature-Hong Kong; Wuhan University

**Schedule:** Ongoing

- In 2001 and 2002 the IUCN's Biodiversity Regional Program assisted the Biodiversity Working Group of The China Council on International Cooperation on Environment and Development in developing a sub-regional biodiversity action plan for Dujiangyan in Sichuan Province.

- The Research Institute for Environmental Law (RIEL), Centre of Excellence under IUCN's Global Environmental Law Programme, has been established at Wuhan University and its Director has completed a research fellowship at the IUCN Environmental Law Centre in Bonn. RIEL has been instrumental in developing a program titled Promoting Environmental Law in China (PELC) and an action plan for implementing it. Initial efforts under PELC will be linked with the Western Development Strategy.
- The Regional Forest Programme has conducted several missions to China and identified a lack of comprehensive institutional framework for sustainable forest management. IUCN has subsequently prepared several concept papers with Chinese partner institutions and a training packet on national area protected systems in southwest China.
- IUCN's Asia Regional Marine Programme is developing a program for the Beibu Gulf in collaboration with the U.S. National Oceanic and Atmospheric Administration and Massey University in New Zealand. The activities focus on sustainable development through ecotourism and biodiversity monitoring.
- In order to help China with the implementation of its National Biodiversity Conservation Plan, IUCN will be cooperating in the following areas: (1) alien invasive species; (2) biosafety; (3) implementation of local biodiversity action plans; (4) national implementation of the Convention on Biodiversity; and, (5) restoration of forests and grasslands under the Western Development Strategy.
- Currently, China has seven natural and mixed World Heritage sites and IUCN may be assisting China in a study to nominate more World Heritage sites.

### MISSOURI BOTANICAL GARDEN

<http://www.mobot.org>

#### Flora of China

**Focus:** Biodiversity Research

**Partners:** Chinese Academy of Sciences (Beijing, Kunming, South Guangzhou and Jiangsu Institute of Botany); California Academy of Sciences; Harvard University Herbaria; Royal Botanic Garden Edinburgh (U.K.); Royal Botanic Gardens at Kew (U.K.); Smithsonian Institution; Muséum National d'Histoire Naturelle (Paris)

**Funding:** U.S. National Science Foundation, Starr Foundation, Stanley Smith Horticultural Trust, Chinese Academy of Sciences

**Schedule:** Initiated 1987, Ongoing

This long-running project was initiated because Chinese plant taxonomists had not been able to obtain access to many herbarium specimens and pertinent literature that was important in the preparation of the first edition of *Flora Reipublicae Popularis Sinicae* (*FRPS*—Latin for: *Flora of China*), which was completed over a 30-year period (from 1961 to 1991). A joint editorial committee was formed to publish a second edition of *FRPS*, which soon will be available in English as hard copy and on the Web in Chinese. The new *FRPS* contains 25 volumes covering over 1,000 plant species each. Seventy percent of the species in each volume will be included in a corresponding *Flora of China Illustrations* volume. The plants of China amount to some 30,000 species, about 10 percent of the world total. China's vast plant species are important sources for horticultural development, as crops, as medicines, and as living testimony to the rich fossil floras that existed around the whole Northern Hemisphere up until about 15 million years ago. It is evident that the trust and cooperation to train Chinese plant taxonomists and better introduce the world to Chinese plants highlight how this is an ideal cooperative project for scientific work among all the nations involved.

### NATIONAL COMMITTEE ON UNITED STATES-CHINA RELATIONS

<http://www.ncuscr.org>

#### Developing Municipal Finance for Local Infrastructure in China

**Focus:** Environmental Management

**Funding:** U.S. Department of State Bureau of Education and Cultural Affairs

**Schedule:** Initiated Spring 2002, Targeted Completion Fall 2002

The limitations of centralized planning, the demise of many state-owned enterprises, fiscal crises at the central and local government levels, and increasing pressures from localities to participate in decision-making have altered the relationship between China's central government and local authorities, as well as between the public and private sectors. These changing fiscal and political dynamics are particularly relevant to China's plans to improve its infrastructure. This project aims to build a greater understanding among American policymakers and practitioners of the demand in China for more and better water supply and wastewater treatment, district heating, solid waste collection and disposal, energy supply, local and regional transportation, and

education and social facilities. This workshop/study tour of several Chinese cities will introduce American finance experts to China's municipal infrastructure system and the current state of fiscal decentralization in China and, at the same time, help to build the capacity of local government agencies and policymakers to plan for infrastructure development. American participants will include urban planners, municipal finance experts and lawyers on the legal, financial, and political dimensions of municipal bond financing.

### **Economic Development and Environmental Management**

**Focus:** Environmental Management

**Partners:** Hazardous waste NGOs and government institutions in cities in Mainland China, Hong Kong, and Taiwan

**Funding:** U.S. Department of State Bureau of Education and Cultural Affairs

**Schedule:** Initiated Spring 2002, Targeted Completion Summer 2002

This two-week study tour for a Chinese delegation to four American cities will include a series of workshops and discussions on regulatory frameworks and best practices, such as: (1) America's Superfund legislation; (2) the financing of hazardous waste treatment; (3) the transnational transfer of hazardous waste; (4) corporate environmental standards and practices of U.S. companies; (5) Chinese enterprises and Sino-American joint ventures; (6) brown fields; and (7) concerns about public health and environmental justice. The Chinese delegation will include hazardous waste specialists from Mainland China, Hong Kong, and Taiwan who work within private and governmental institutions responsible for hazardous waste regulation and management. The group also will include one environmental journalist or editor.

### **Grassroots Environmentalism and Environmental Education Workshop and Study Tour**

**Focus:** Environmental Education

**Partners:** Center for Environmental Education and Communication of the Chinese State Environmental Protection Administration (SEPA), Qingdao City and Heilongjiang Province Environmental Protection Bureaus

**Funding:** U.S. Department of State Bureau of Education and Cultural Affairs, United Technologies Corporation

**Schedule:** Initiated May 2001, Completed June 2001

The goal of this study tour and workshop was to foster a dialogue between teachers, administrators, NGO leaders, and students in the field of environmental education. It was designed in response to strong interest from American and Chinese environmentalists and as a follow-up to the National Committee's 1998 study tour for Mainland, Hong Kong, and Taiwan environmental NGO leaders. This project, which included five American environmental education specialists and dozens of Chinese colleagues, promoted cooperation between and among institutions with environmental NGO ties and aimed to strengthen public-private partnerships. The exchange achieved several objectives. American participants learned a great deal about environmental conditions in China and Chinese government, business, and NGO efforts to educate its public about the environment. The workshops introduced Chinese colleagues to American environmental awareness programs addressing such issues as urban environmentalism, biodiversity, pollution, conservation, energy efficiency, and species preservation. Hands on teaching experience was gained via the Americans running demonstration programs and Chinese and Americans educators collaborating on running demonstrations programs. Lastly, linkages were made between environmental leaders, information and resource materials were exchanged, and friendships were formed. Geographic diversity was achieved by including destinations in the interior, including Harbin City and Zhalong Nature Reserve in Heilongjiang Province. The study tour also included Qingdao City and Laoshan Mountain in Shandong Province.

### **Natural Disaster Prevention and Cooperation**

**Focus:** Environmental Management

**Partners:** Hong Kong Red Cross, China Charities Federation, Amity Foundation, Chinese Ministry of Civil Affairs, Nantou County Fire Department

**Funding:** U.S. Department of State Bureau of Education and Cultural Affairs

**Schedule:** Initiated January 2001, Completed April 2001

This natural disaster study tour encouraged collaboration, brought together colleagues from Mainland China, Taiwan, and Hong Kong with American counterparts, and attempted to de-politicize the disaster response process and develop effective inter-regional policies. It was conceptualized in the aftermath of the major earthquake in Taiwan (September 1999), during which the National Committee was hosting a delegation from Taiwan in the field of transportation and energy planning. The study tour members exchanged ideas with American counterparts and among themselves, and observed the American disaster response system, particularly how the public and private sectors work together to address the effects of floods, earthquakes, fires, and hurricanes. The project gave Chinese participants the opportunity to meet with their American counterparts at federal, state and

local government agencies, relief organizations, and volunteer groups. Amity Foundation, China Charities Federation, and the Hong Kong Red Cross among others were represented in the delegation. Several ongoing partnerships resulted from the project.

### **WTO Accession and Agriculture**

**Focus:** Agriculture Policy

**Potential Partners:** U.S. Trade Representative, the U.S. Department of Agriculture, economic research institutions and corporations, Chinese Ministry of Foreign Trade and Economic Cooperation (MOFTEC), Chinese Ministry of Agriculture

**Funding:** U.S. Department of State Bureau of Education and Cultural Affairs

**Schedule:** Initiated 2002, Ongoing

This project will support a series of workshops in China to consider the effects of WTO accession on the agriculture sector. Chinese participants would include farmers, local officials, economists, and the news media. American discussants will include specialists in international trade, agribusiness representatives, commodity traders, and policy analysts, who will examine the likely practical consequence of WTO accession for grain and cotton markets, as well as for meat, fruit, vegetables, and further value-added food products. By drawing a practical, real-world picture of the potential positive and negative repercussions of WTO accession, farmers, business people, and policymakers would be better prepared to make the necessary adjustments and would be less apprehensive about the impact of China's WTO entry. In addition to Beijing, where the delegates will meet with national policy leaders, the itinerary might include workshops in the cities of Changchun, Zhengzhou, and Guangzhou.

### **NATURAL RESOURCES DEFENSE COUNCIL (NRDC)**

<http://www.nrdc.org>

**Ongoing Projects (See CES 4):** ACCORD21 Building Demonstration Project; Controlling Power Plant Emissions; Energy Efficient Building Codes

*(Editor's Note: See commentary by Robert Watson and Barbara Finamore in this issue of the China Environment Series for an update of NRDC's Building Demonstration Project)*

### **Fuel Cell Vehicle Development and Commercialization**

**Focus:** Air Policy, Transportation Research

**Partners:** Shanghai Municipal Economic Commission, Shanghai Tongji University, China Ministry of Science and Technology, South-North Institute for Sustainable Development, Taiwan Institute for Economic Research

**Funding:** W. Alton Jones Foundation, China Sustainable Energy Program of the Energy and Packard Foundations

**Schedule:** Initiated 2001, Targeted Completion 2002

This project will support the development and commercialization of fuel cell vehicles in China, a key research and development (R&D) objective of the Tenth Five-Year Plan. The Natural Resources Defense Council (NRDC) and its partners will facilitate international technical exchanges and assist with a national fuel cell development strategy that will: (1) spell out cost-effective approaches China should take to promote the use of fuel cell technology in urban transportation, based on an in-depth technoeconomic analysis of various options; (2) identify the needed adjustments in existing policies and incentives to encourage fuel cell commercialization in China; and (3) encourage public-private partnerships in fuel cell commercialization by proposing a framework of collaboration between Chinese and foreign partners, as well as among Chinese partners themselves, in such areas as R&D, demonstration, testing, manufacturing, infrastructure construction and operation, and marketing, with a view to accelerating the introduction of fuel cell vehicles into the Chinese market.

### **PESTICIDE ACTION NETWORK NORTH AMERICA**

<http://www.panna.org>

### **Promoting Ecological Agriculture in China**

**Focus:** Agriculture Management, Environmental Capacity Building

**Partners:** Center for Community Development Studies, Yunnan Entomological Society

**Funding:** Rockefeller Brothers Fund

**Schedule:** Initiated 2000, Ongoing

Pesticide Action Network North America (PANNA) is one of five independent regional centers of Pesticide Action Network, an



international coalition of organizations and individuals working to eliminate the use of hazardous pesticides and promote ecologically sound and socially just alternatives. PANNA's main work in China involves collaborating with the Kunming-based NGO Center for Community Development Studies (CDS) to promote compliance with the World Bank's pest management policy. PANNA and CDS have conducted participatory monitoring and evaluation of the World Bank-financed Anning Valley Agricultural Development Project in Sichuan Province and discovered extremely high levels of pesticide use. The World Bank and its Chinese counterpart offices have agreed to address the concerns of PANNA and local farmers by developing a plan for training in ecological integrated pest management as required by World Bank policy. The joint monitoring project is designed to serve as a model for promoting local empowerment and sustainable farming practices throughout the World Bank's agricultural development projects in China. Documentation of work in China also will contribute to PANNA's growing collection of case studies that provide the basis for recommendations for reform of World Bank agricultural lending practices throughout the developing world. In addition, PANNA provides strategic and technical support to Chinese organizations engaged in promoting ecological agriculture, such as the Yunnan Entomological Society (YES), and fosters links between Chinese groups and similar organizations in other parts of the world. In the coming years, PANNA will support YES in their efforts to develop a new organization called Pesticide Eco-Alternatives Center that will engage in policy advocacy and conduct collaborative projects to educate consumers about choosing pesticide-free food.

### RENEWABLES FOR DEVELOPMENT

<http://www.inshp.org>

#### Large Scale Rural Electrification through Renewable Energy

**Focus:** Energy Policy

**Partners:** International Network on Small Hydro Power (IN-SHP), Hangzhou, China (Chinese GONGO)

**Funding:** The China Western Provinces Development Program, Emissions Trading Credits, Foreign Investment

**Schedule:** Initiated Spring 2002, Targeted Completion 2005

This project represents China's first large-scale renewable energy-based rural electrification program to be conducted primarily at the county level. Two complementary programs (initiated by the Chinese central government and UNDP) will be implemented in 400 counties throughout the poorer regions of China: 1) *Rural Electrification Construction Plan 2001-2005* will be a nationwide program on rural electrification by renewable energy, coupled with grid-connection and extension; 2) *Green Villages Program 2001-2010*, a nationwide program aimed at the replacement of wood fuel by small hydropower in off-grid areas coupled with resource protection, including reforestation, flood control, agriculture, and soil erosion. Both of these programs are designed to make the benefits of clean renewable energy available to rural villages of China where energy needs are currently met with wood fuel. By managing initial electrification with renewable energy, the two programs help rural China leapfrog its dependence on fossil fuels and allow for sustainable development. Renewables for Development and its Chinese partner IN-SHP were jointly selected to conclude cooperation contracts leading to local-based establishments with provincial and county governments for the development of low-risk and best-practice strategies. The most crucial issues will be generating and coordinating foreign investment and international cooperation for self-construction, self-management and self-consumption of renewable energy in each county's distribution zone.

### RESOURCES FOR THE FUTURE

<http://www.rff.org>

#### Air Quality Improvement in Shanxi

**Focus:** Air Quality Policy

**Partners:** Norwegian Institute for Air Research, RCA Associates, Chinese Research Academy of Environmental Science, Shanxi Provincial Government, Taiyuan Municipal Government, U.S. EPA

**Funding:** Asian Development Bank

**Schedule:** Initiated March 2001, Targeted Completion December 2002

The project team (led by Resources for the Future—RFF) will provide technical assistance to the Shanxi provincial government to develop a workable SO<sub>2</sub> emission trading system. The initial focus of the project is on the capital city of Taiyuan. The RFF team, in cooperation with both international and domestic consultants, is designing an emission trading system suitable to the local situation. Facility-specific targets, consistent with the China's Tenth Five-Year Plan, are being established, along with appropriate monitoring and tracking systems. The U.S. EPA is providing Taiyuan with extensive training on the operation of SO<sub>2</sub> emission trading.

### SAVE CHINA'S TIGERS

<http://www.savechinastigers.org>

#### **Saving the South China Tiger**

**Focus:** Conservation Education

**Partners:** China State Forestry Administration (SFA), Provincial Forestry Departments (particularly Hunan Province)

**Funding:** Internal funding

**Schedule:** Initiated 2000, Ongoing

Due to its environmental flagship status, cultural symbolism, and endangered status, the South China Tiger is currently the conservation focus of the UK-based Save China's Tigers (SCT). In 2001, SCT funded the second stage of the South China Tiger survey in cooperation with national and Hunan provincial forestry administrations. SCT also donated 20 infrared cameras to the State Forestry Administration to continue their infrared camera monitoring surveys. Through the act of saving the South China Tiger, SCT intends to promote public awareness of the importance of wildlife to the human society as a whole, and the critical role of large carnivores, such as tigers, within their natural ecosystems. Planning is also underway to introduce advanced conservation models from South Africa to China in the near future.

### THE NATURE CONSERVANCY (TNC)

<http://www.nature.org>

#### **Yunnan Great Rivers Project (Phase II)**

**Focus:** Biodiversity Research, Conservation Management

**Partners:** Over forty partners including: China's State Environmental Protection Administration; State Development Planning Commission; Yunnan Provincial Government (Provincial Planning Commission, Department of Forestry, and other Provincial Bureaus, Departments, and related prefecture offices); Institute of Forest Planning and Design; South North Institute for Sustainable Development (Chinese NGO); Southwest Forestry College; Chinese Academy of Science; Kunming Institute of Botany and Kunming Institute of Zoology

**Funding:** Alcoa, International Community Foundation, Starr Foundation, Yunnan Provincial Government, UN Foundation, and W. Alton Jones Foundation

**Schedule:** Initiated 1998, Phase I Completed 2000, Phase II Ongoing

The Yunnan Great Rivers Project (YGRP) is a joint conservation and sustainable development project between the Yunnan provincial government and The Nature Conservancy (TNC). The recently completed Conservation and Development Action Plan for Northwest Yunnan will guide the work of Phase II (see CES 4 for an overview of Phase I). TNC is collaborating with government and academic partners, as well as local village leaders to create conservation site plans to: (1) protect the area's unique biodiversity; (2) reduce and/or eliminate threats to the area's biodiversity; and (3) promote sustainable development. In addition, major initiatives have been launched to develop alternative energy sources for northwest Yunnan as well as to promote ecotourism as sustainable economic alternatives to the threats posed by the over-collection of fuel wood and mass tourism. The Yunnan provincial government has provided funding and other resources to this project and other funding support is provided by a variety of individual, corporate, and foundation donors. (*Editor's Note: See Commentary by Ou Xiaokun on TNC's work in China in this issue of the China Environment Series*)

### U.S.-CHINA ENERGY AND ENVIRONMENT TECHNOLOGY CENTER, TULANE UNIVERSITY

<http://www.tulane.edu/~uschina>

**Ongoing Projects (see CES 4):** U.S.-China Clean Coal Technology Center, the Integrated Resource Planning for Major Developing Cities in China Project has been postponed

#### **Joint Projects for the 2008 Beijing Green Olympics**

**Focus:** Energy Efficiency Policy

**Partners:** Beijing Municipal Government

**Schedule:** Initiated 2001, Ongoing

The 2008 Beijing Olympic Games pose an excellent opportunity for showcasing clean energy technology and equipment. The

U.S.-China Energy and Environmental Technology Center (EETC) therefore has initiated a series of projects including technology transfer and energy-efficiency policy recommendations. In 2001, EETC initiated meetings of the Yanzhou Coal Mine Group with DoE and U.S. Trade Development Agency experts on the pre-feasibility study for using high-sulfur coal to produce high-value added chemicals (such as methanol and dimethyl ether plus integrated gasification combined cycle) for power generation. EETC also has helped to initiate a pre-feasibility study for polygeneration in Shandong Province. Additionally, EETC worked with the Beijing municipal government to sponsor and co-host the Workshop on Improving Industrial Boilers in January 2002. This was followed by EETC participation in the Beijing Energy and Environment International Symposium and the Research on Demonstration of High-Efficiency Clean Energy Technology and Relevant Policy and Infrastructure for Beijing City. After the different mechanisms for the implementation for this project are determined, funding sources will be finalized.

### **U.S.-China Natural Gas Training Program**

**Focus:** Energy Capacity Building

**Partners:** Tulane University, Gas Technology Institute

**Funding:** Estimated Cost \$50,000 per year, National Petroleum Technology Office under the Annex III of the U.S.-China Fossil Energy Protocol

**Schedule:** Initiated 2001, Ongoing

This project aims to create a pilot one-week training program and develop training materials for building up a Chinese natural gas professional team to manage large-scale natural gas projects. This training program is focusing on producing: (1) a set of training materials for future courses; (2) an initial one-week training in Beijing; (3) a follow-up information tour to the United States in 2002; and (4) development of other related follow-up training activities. A separate training program on coal bed methane also has been initiated.

### **U.S.-CHINA ENVIRONMENTAL FUND**

<http://www.uscef.org>

### **Biodiversity Conservation and Protected Area Management**

**Focus:** Conservation Management

**Partners:** Global Environment Facility (GEF), UNDP, University of Wisconsin-Madison, Yunnan Provincial Government, Sichuan National Park Office, Qinghai Environmental Protection Bureau (EPB)

**Funding:** Total budget \$2.5 million (\$750,000 from GEF; over \$1 million co-financing from Yunnan Provincial Government; over \$400,000 co-financing from University of Wisconsin and U.S.-China Environmental Fund—USCEF)

**Schedule:** Initiated 2001, Targeted Completion 2004

Under this project a range of capacity building programs is being developed in western China (Yunnan, Sichuan, Qinghai provinces, and Tibet Autonomous Region) with local agencies to conserve biodiversity and sustainably manage protected areas. USCEF programs tend to either work with local and provincial administrative units to develop master plans or involve local stakeholders in project design and implementation, including adoption of alternative agricultural practices and livelihoods to reduce development pressures on sensitive ecosystems. The first major conservation program is a multi-agency, multi-level (involving village leaders to provincial level bureaus) GEF project in the upper Mekong River watershed in the Wuliang Mountains of Yunnan. The Yunnan GEF project focuses on developing local watershed co-management councils that will make decisions on biodiversity protection, resource conservation, and alternative practices. These decisions will be based on data from ongoing biodiversity monitoring systems, supported by observations of local villagers.

### **The Great Wall at Badaling**

**Focus:** Conservation Management

**Partners:** Beijing Municipal Government, Badaling Special Zone Administration

**Funding:** Total Budget 10 million RMB (Phillips Petroleum Company 5 million RMB, USCEF 2 million RMB, Badaling Special Zone Administration 3 million RMB)

**Schedule:** Initiated 1999, Ongoing

This project integrates environmental planning with economic development by balancing conservation and tourism at Badaling the most popular Great Wall site. Key in the design of the master plan has been how to accommodate increased tourism from the newly completed Beijing-Badaling expressway. In partnership with the Beijing municipal government and the Badaling special zone administration, USCEF is working to preserve the cultural integrity of this section of the Great Wall through the design and development of the International Friendship Forest (IFF)—a 100-acre natural park along the western edge of the Great Wall at

Badaling. The IFF will open to the public in late 2002.

### **Interpreting China**

**Focus:** Environmental Education, Conservation Management

**Partners:** National Association for Interpretation, China National Park Administration, Sichuan National Parks Office, China National Park Association, Beijing Parks Bureau, Beijing University, Sichuan University

**Funding:** \$100,000-\$250,000 per year

**Schedule:** Ongoing

Due to dramatic economic and socio-demographic changes in China, Chinese visitors flood cultural and natural sites as never before. Surprisingly, there are virtually no educational or "interpretative" programs for China's premier cultural and natural sites. To address this need, USCEF developed a multi-year memorandum of understanding with the U.S. National Association for Interpretation (NAI), the world's premier professional association of more than 4,500 cultural and natural resource educators. Based on similar programs in the United States, NAI's research indicates that interpretive programs can forge emotional and intellectual connections of tourists to China's cultural and natural heritage that will foster a stewardship ethic to help protect China's threatened resources. Together USCEF and NAI are establishing a long-term capacity building program titled "Interpret China" that has two major components: (1) site specific interpretive programs at model sites (e.g., Great Wall at Badaling, Wolong Nature Reserve, and Beijing Parks); and (2) training workshops to build the capacity of Chinese professionals to improve onsite informal education programs at parks, nature reserves, historic sites, and zoos throughout China.

### **Lead Poisoning Prevention in China**

**Focus:** Health Policy

**Partners:** Alliance to End Childhood Lead Poisoning, Institute for Preventive Medicine, Shanghai Children's Medical Center, SEPA, Beijing University

**Funding:** \$50,000-\$100,000

**Schedule:** Planning Stage

Presently in the planning phase, this project will assist key Chinese institutions to develop and implement education and prevention programs to control and eliminate environmental sources of childhood lead poisoning. USCEF, working with the Alliance to End Childhood Lead Poisoning and Chinese partners, will help build coalitions of government agencies, environmental organizations, industry associations, universities, and medical centers to provide technical and policy assistance at the national and local levels and help conduct community-based pilot projects. Currently, a coalition is being built in Beijing with hopes of launching specific activities by late 2002. Partnerships are being sought within Chinese, U.S., and international organizations.

### **National Parks, World Heritage Sites**

**Focus:** Conservation Policy

**Partners:** China National Park Administration within the Ministry of Construction; China National Park Association; Beijing University, EarthVoice (U.S. NGO); Wisconsin State Parks; University of Wisconsin-Madison

**Funding:** \$100,000-250,000 per year

**Schedule:** Initiated 1999, Ongoing

In cooperation with the Ministry of Construction's National Park Administration, USCEF is helping to build the institutional capacity of China's national park system. This technical assistance program will: (1) publish interpretive literature; (2) strengthen policies and laws for park administration and concessions; (3) create design standards for construction within parks; (4) address economic development needs of communities surrounding parks; and (5) conserve threatened cultural and natural resources. Specific activities include policy research and development, training, strategic planning utilizing GIS, interpretive signage, visitor programs and publication of educational materials, as well as ongoing exchanges with U.S. park professionals.

### **"Search for Solutions" Environmental Education Program**

**Focus:** Environmental Education

**Partners:** SEPA, Municipal EPB environmental education centers, Municipal Education Commissions in Beijing, Shanghai, Tianjin, and Shenzhen

**Funding:** Phillips Petroleum Company

**Schedule:** Initiated 1998, Ongoing

After initiating an environmental education exchange between 18 U.S. and Chinese sister cities in 1996, USCEF is now

working with municipal Environmental Protection Bureaus (EPBs) on an experiential environmental education program, titled “Search for Solutions” for primary and secondary students. The program’s goal is to help Chinese elementary and secondary students become better environmental citizens by providing environmental education materials and experiential, hands-on learning opportunities. The two major elements of “Search for Solutions” are: (1) publication of new or adaptation of existing environmental materials that are informative and directly relevant to local environmental conditions; and (2) coordination of experiential environmental field studies that build ties between students and their local environment. Main publications include: (1) municipal environmental handbooks—hands-on, practical guides on local environmental conditions that turns a city’s environmental management systems into a laboratory for study; (2) municipal field trip guidebooks that inventory suitable sites for experiential learning; and (3) environmental posters and maps. As part of this education program, USCEF also founded “TEA” (Theater for Environmental Awareness, see below) an innovative activity to enable students to express their environmental concerns.

### **Theater for Environmental Awareness**

**Focus:** Environmental Education

**Partners:** International Awareness Community Theater (I ACT)

**Funding:** \$100,000-\$250,000 per year

**Schedule:** Initiated 1998, Ongoing

Theater for Environmental Awareness (TEA) is an innovative and interactive educational program that enables Chinese students to communicate their environmental concerns through role-playing and the performance arts. Utilizing techniques developed by I ACT, international trainers work with Chinese teachers, drama instructors, and professional actors to organize performances in schools and cultural community centers. In 2002, USCEF and I ACT will launch an expanded TEA program that will include a reference and training manual, teacher training workshops, a “Summer Break TEA” program at a Beijing community center, and series of school and community performances.

### **Wolong Nature Reserve (Giant Panda) Breeding Center**

**Focus:** Conservation Management

**Partners:** Wolong Nature Reserve, The Humane Society of the U.S. National Association for Interpretation, Jones & Jones (a U.S. design firm)

**Funding:** \$2 million

**Schedule:** Targeted Completion of Final Designs Fall 2002, Targeted Initiation of Construction 2003

The China Research and Conservation Center for the giant panda (Wolong Breeding Center) is situated within the Wolong Nature Reserve, home to approximately 100 wild giant pandas, the largest concentration of giant pandas in the world. The reserve encompasses 100 peaks over 5,000 meters high and covers more than 200,000 square hectares in Sichuan Province. The Wolong Breeding Center has loaned giant pandas to both the National Zoo in Washington, D.C. and the San Diego Zoo. Within the reserve, the Breeding Center has become a major domestic and international tourist destination—projections anticipate there will over 500,000 visitors per year at the Breeding Center in the immediate future. USCEF is currently preparing a redevelopment plan and interpretation program to significantly improve Wolong’s aging facilities with the following goals: (1) to enable the Breeding Center’s research and scientific staff to focus on the care and breeding of pandas instead of serving as tourist guides; (2) to provide an enriching educational experience for Wolong visitors; and (3) to support the incremental development of a giant panda reintroduction program. USCEF also is serving as advisors to Wolong on a master plan for the entire reserve, which is facing increasing tourism development pressures.

### **WILDLIFE CONSERVATION SOCIETY**

<http://www.wcs.org>     <http://www.wildlifewarden.net/wcs.htm>

### **China Program**

**Partners:** China Ministry of Education, China State Forestry Administration, China Wildlife Conservation Association, Heilongjiang Forestry Bureau, Jilin Forestry Bureau, Tibet Forestry Department, Shanghai Agriculture and Forestry Bureau, Gansu Endangered Wildlife Breeding Center, China Endangered Species Import and Export Administration, Shanghai CITES Office, Shanghai Center for Youth Wildlife Conservation Education, Jilin Hunchun Nature Reserve, East China Normal University, Peking University, Anhui Medical University, Anhui University of Science & Technology, Guilin Medical University, Second Military Medicine University, Shanghai University of TCM, Northeast Forestry University, Jilin University,

ExxonMobil China, Ogilvy & Mather, Shanghai Zoo, Shanghai Wild Animal Park.

**Focus:** Conservation Research, Environmental Education

**Funding:** NFWF/Save the Tiger Fund, MacArthur Foundation, U.S. Fish and Wildlife Service, Cline Family Foundation

**Schedule:** Initiated 1996, Ongoing

The strategy of the Wildlife Conservation Society (WCS) in China has been to undertake conservation and education activities, as well as offer technical and financial support to wildlife research, especially on tigers and other endangered species. WCS collaborates with the State Forest Administration, China CITES Administration, local government agencies, institutions, traditional Chinese medicine practitioners, and NGOs. A summary of the major areas of WCS work is below.

- *Conservation workshops.* The first program conducted by WCS in China was an Asian Conservation and Communication Program. Since 1996, WCS has organized a total of 12 workshops on the theme of “Conservation of Endangered Wild Species Used in Traditional Chinese Medicine,” reaching top traditional Chinese medicine practitioners and students in Jiangsu, Anhui, Jilin, Shanghai, Guangxi, provinces.
- *Education programs.* To educate school children, WCS has initiated a series of successful activities, including “Model school on wildlife conservation,” “Saving the tigers,” “Big hands in small hands to save wildlife,” and publishing a series of booklets on the wildlife conservation. WCS China Program also works to raise public awareness of conservation. Some public education activities have included: (1) a television commercial on tiger conservation was produced with Ogilvy & Mather Shanghai Advertising; (2) a prominent billboard was placed outside the Shanghai International Airport, and (3) since 2002, WCS has focused its efforts on the tiger population in northeast China and therefore WCS and the Ministry of Education have been conducting a conservation education project on wildlife conservation among elementary and middle schools in four Chinese provinces—Sichuan, Yunnan, Jiangxi, and Hubei.
- *Wildlife conservation and nature reserve projects.* WCS has initiated several successful projects in China on wildlife conservation. Based on several field surveys, WCS and the Heilongjiang Forestry Department convened a workshop to develop a recovery plan for the wild Amur Tiger population in northeast China. In 2001, Jilin Province, with assistance from WCS, established the Hunchun Nature Reserve, the first reserve to prioritize the conservation of the Amur Tiger and Far Eastern Leopard in China. Since 1998, WCS Director for Science Dr. George B. Schaller and his colleagues in China have been working together with the Tibetan Forest Department in conducting a series of surveys and training courses on conservation and biodiversity in southeast Tibet. In addition, concern for the current status of the Chinese alligator in the wild led WCS to conduct field surveys in 1999. These surveys revealed that the alligator population is critically low in wild and WCS therefore is now assisting China’s Forestry Administration in initiating a reintroduction program of the alligator into its former habitat.

### WINROCK INTERNATIONAL

<http://www.winrock.org>

### Asia Alternative Energy Program Support

**Focus:** Energy Policy, Energy Efficiency Education

**Funding:** World Bank

**Schedule:** Initiated 1999, Ongoing

The purpose of this activity is to provide support for a World Bank initiative to identify opportunities for mainstreaming renewable energy and energy efficiency technologies into the World Bank’s cross-sector lending program and to promote the World Bank’s Asia Alternative Energy Program (ASTAE). Tasks under this project are: (1) alternative energy education; and (2) outreach in non-energy sectors, which involves oversight and preparation of background and promotional materials on alternative energy, particularly a briefing package, and organizing mechanisms for information dissemination. Jeremy Levin of Winrock’s Clean Energy Group, who is assigned fulltime to the World Bank, provides technical support and advisory services (especially on donor support, strategic planning, and analysis) to ASTAE.

### Building Capacity in Agriculture Business Operations in China

**Focus:** Agriculture Policy

**Partners:** Chinese Academy of Agricultural Sciences

**Funding:** Starr Foundation

**Schedule:** Initiated 2000, Targeted Completion 2003

Implemented by Winrock’s Planning and Strategic Initiatives Unit and China Office, this project offers an education program to strengthen the foundation and management of modern farming enterprises in China, which has a direct effect on the environment. The Agribusiness MBA program builds on the successful implementation (from 1996 to 1999) of the Leading

Economic and Agricultural Development into the 21st Century (LEAD21) model for advanced education, pioneered by Winrock with support of the Starr Foundation. Twenty-nine top students recruited from eight leading national agriculture universities in China studied and completed Ph.D. degrees in agricultural economics. All of these graduates remained to teach and/or conduct research in national universities and research institutes throughout China. The project successfully pioneered an approach to counteract the serious, ongoing drain of talent from China. The key feature is that participants receive Western-style training in China and remain to contribute their expertise to the country, in contrast to the conventional model in which Chinese graduates of advanced education programs overseas opt not to return to China. To demonstrate this new model for Agribusiness MBAs, Winrock brought to China a complete curriculum adapted from leading Western universities and provided qualified teaching staff to lead instruction from within China. This approach provides convenient, cost-effective, and world-class training in advanced international practices for leading Chinese scholars.

### **Fostering Leadership of Women in China**

**Focus:** Capacity Building, Forestry Management

**Funding:** Ford Foundation

**Schedule:** Initiated 2000, Targeted Completion 2003

This program opens the door for Winrock in China to establish a long-term women's leadership program, based on the ten-year successful model of Winrock's women's leadership program in Africa. The program contributes to Winrock's goals of increasing gender equity in development, improving productivity of rural farmers, protecting the environment, and building the capacity of local organizations. The purpose of this program is to train and mobilize a group of pioneering women leaders and male supporters in key institutions to improve the policies, programs, and practices that affect rural women in China, especially in the agriculture and forestry sectors.

### **Short Term Consultant Support for Capacity Building for the Rapid Commercialization of Renewable Energy**

**Focus:** Energy Policy

**Partners:** Chinese Renewable Industries Association

**Funding:** United Nations Development Programme

**Schedule:** Completed Fall 2001

Judith Siegel, Managing Director of Winrock's Clean Energy Group, recently completed a consultancy to assist the Chinese Renewable Energy Industries Association (CREIA) in developing an Annual Operating Plan for the calendar year 2002 and assist CREIA in the development of a Five Year Business Plan. CREIA provides assistance to the Chinese domestic renewable energy industries to promote the adoption and expansion of renewable energy markets in China. Since its creation in January 2000, CREIA has proactively (1) facilitated business development between domestic and international companies; (2) served as a spokesman on industry's behalf with lead government agencies responsible for renewable energy programs and policy development in China; and (3) functioned as an information conduit to the general public promoting the benefits of renewable energy for energy development and environmental protection in China. (*Editor's Note: See 19 July 2001 Renewable Energy in China Meeting Summary in this issue of the China Environment Series for more information on CREIA*)

### **Southwest China Participatory Upland Resource Development**

**Focus:** Agriculture Training, Environmental Education

**Funding:** Ford Foundation

**Schedule:** Initiated 2000, Targeted Completion 2003

For more than a decade, Winrock has been continuously involved with upland development in Yunnan Province. This project aims to build capacity and promote participatory upland development in poor areas beyond Yunnan provincial borders. Specific activities within this project have included: (1) supporting degree and non-degree training in management of natural resources in the uplands; and (2) assisting fellows in developing research agendas for their degree requirements. These degree and non-degree training programs have been constructed for participants in the fields of environmental studies and natural resource management, agrarian studies, land use planning, community forestry, agro-forestry and forest management, as well as social and development studies. Over the life of the project, more than 30 professionals have been trained.

### **Technical Assistance for Renewable Energy Development Project**

**Focus:** Renewable Energy

**Partners:** Center for Renewable Energy Development (under U.S. Department of Energy/NREL)

**Funding:** Asian Development Bank

**Schedule:** Initiated 1999, Completed 2000

This project set out to address barriers to commercial development of renewable energy through: (1) focused assistance to enhance the policy and institutional framework to further commercialization of selected renewable energy resources; (2) development and evaluation of prioritized investment programs for commercialization of selected technologies (biogas, bagasse cogeneration, and solar thermal); and (3) identification of specific investment requirements for external financing for a project that could supply energy to remote areas. A team fielded by Winrock's Renewable Energy Division (now the Clean Energy Group) recommended that the Asian Development Bank: (1) proceed with the design of a loan component to accelerate expanded use of solar thermal technology, especially solar water heating; (2) continue with the design of a loan component to introduce advance cogeneration technology into large well-managed sugar factories; and (3) establish a new Secretariat in China led by a senior government official and reporting to the State Council to coordinate and set national objectives for expanded use of renewable energy.

**WORLD RESOURCES INSTITUTE**

<http://www.wri.org/>

**China BELL (Business Environment Learning Leadership)**

**Focus:** Environmental Education

**Partners:** Center for Environmental Education and Communications of SEPA, Renmin University, Tsinghua University, Peking University, Fudan University, Hong Kong Polytechnic University, Dalian University

**Funding:** GE Fund, Alcoa Foundation, Netherlands Ministry of Foreign Affairs, Boeing, The Kearny Alliance

**Schedule:** Initiated 2000, Ongoing

Today, there are 62 nationally accredited institutions that grant graduate management degrees in China, a number that is steadily increasing. The number of top students enrolling in these schools is also growing, making them a critical point of intervention in the development of China's future business leaders. The infusion of environmental and sustainable management into the curricula of these business schools is the goal of this World Resources Institute (WRI) BELL project. The China BELL project: (1) trains and promotes networking among business school faculty; (2) publishes curricula; (3) supports course development; and (4) helps business schools understand changes in industry practice and skill needs that are relevant to curriculum development and research. In North and Latin America, WRI's BELL projects have produced over 40 case studies covering the intersection between profitability and sustainability in such areas as accounting, finance, marketing, organizational behavior, and production. BELL held its second China BELL Conference in April 2002. The conference enabled WRI's partner schools to use the curriculum modules they had developed to train a large number of Chinese professors on how to use the new material in marketing, management, accounting, finance, strategy, and operations courses. The curriculum modules presented at the conference were given to the attending business school representatives in order to help them infuse their own curricula with environmental content. For more information, please see <http://www.wri.org/sep/chinabell.html>.

**New Ventures Asia**

**Focus:** Environmental Capacity Building

**Funding:** Citigroup Foundation

**Schedule:** Initiated 2002, Ongoing

Since 1997, WRI's New Ventures Latin America program has supported sustainable enterprise creation by accelerating the transfer of venture capital to outstanding investment opportunities that incorporate social and environmental benefits. By providing sound business opportunities for investors and the growing Latin American economy, New Ventures has been demonstrating that investing in sustainable enterprises makes good business sense. WRI has been working on New Ventures in Latin America to connect investors with sustainable business leaders, and WRI is moving this successful program to Asia, beginning with China. Additional information can be found at <http://www.new-ventures.org>.

**Resources Policy Support Initiative**

**Focus:** Conservation Management, Conservation Policy

**Partners:** Center for Biodiversity and Indigenous Knowledge, Research Center for Ecological and Environmental Economics, Yunnan Academy of Social Sciences, Yunnan Institute of Geography

**Funding:** Sida, Royal Dutch Foreign Ministry, Rockefeller Foundation, Ford Foundation-Beijing

**Schedule:** Initiated 1997, Targeted Completion 2002

The Resources Policy Support Initiative (REPSI) is a project to improve the basis for decision-making about development and natural resource use in the uplands of mainland Southeast Asia. REPSI aims to provide policymakers with timely options for sustainable upland management and to strengthen the capacity of local organizations to analyze such management issues,



through independent research, outreach, and regional exchange. REPSI is a collaborative effort by WRI and many local and international institutions. In China, REPSI focuses on Yunnan Province where WRI currently is: (1) analyzing the effects of decentralized natural resource management on local ecosystems and people's welfare; and (2) facilitating a regional dialogue on needed innovations in regional governance for transboundary natural resources. Further information on the initiative can be found at <http://www.wri.org/repsi>.

### **WORLDWIDE FUND FOR NATURE, CHINA PROGRAM OFFICE (WWF CHINA)**

<http://www.wwfchina.org>

**Ongoing Projects (See CES 4):** Environmental Educators' Initiative for China, Integrated Conservation and Development in Pingwu County, Living Yangtze Program, Pilot Projects in Wetland Restoration and Use, Tibetan Antelope Protection

### **Capacity Building in Nature Conservation in Tibet**

**Focus:** Environmental Capacity Building, Conservation Management

**Partners:** Tibet Forestry Department

**Funding:** WWF US

**Schedule:** Initiated May 2000, Ongoing

Building capacity is essential to the long-term health and effectiveness of a project. In Tibet, the lack of well-trained staff in nature reserves and the necessary framework to support them is a pressing issue. WWF is laying a foundation by building a systematic training program targeting decision-makers and conservation managers, nature reserve staff, researchers, and community workers. The main goals of this project are: (1) to improve the capacity of nature reserve managers so that they can effectively implement nature reserve policies, laws, and conservation awareness activities; (2) to provide nature reserve managers with basic knowledge so they can conduct wildlife surveys and monitoring; (3) to improve the capacity of Changtang Nature Reserve managers in community management to more effectively handle poaching in nature reserves; and (4) to improve the capacity of the Tibet Forestry Department staff in various fields such as English language, management skills, and information analysis. Currently, WWF-China is preparing training for community management and wildlife monitoring, and Geographic Information System (GIS).

### **China Air Conditioner Energy Efficiency Standard**

**Focus:** Environment Policy

**Partners:** Beijing Energy Efficiency Center

**Funding:** WWF Netherlands, WWF China

**Schedule:** Ongoing

The objective of this project is to reduce greenhouse gas emissions by promoting more sustainable energy consumption and supporting policy measures. In 2001, the Chinese government adopted new, stricter energy standards for air conditioners, which had been developed jointly by government, industry, and scientists through a program sponsored by WWF. The new national standard (GB 12021.3-2000) regulates the energy performance of air conditioners, with the aim of stimulating the industry to adopt new technologies and innovations for saving energy.

### **Community Education in Baimaxueshan Nature Reserve**

**Focus:** Biodiversity Management, Conservation Capacity Building

**Partners:** Baimaxueshan Nature Reserve Management Bureau

**Funding:** WWF UK, WWF Switzerland, British Petroleum (BP)

**Schedule:** Initiated 1996, Ongoing

Located between the Jingsha, a major branch of the Yangtze and the Mekong Rivers in northwestern Yunnan Province, Baimaxueshan Nature Reserve is one of China's richest reserves in terms of biodiversity, but one of its poorest areas in terms of the economy. This project is designed to empower local communities to actively participate in making decisions and taking action to manage their natural resources sustainably. This goal will be achieved by: (1) facilitating a learning process through community-initiated activities to foster knowledge, skill, and attitudes of the participants in sustainable management of their local natural resources; (2) increasing the capacity and potential of people and communities in the selected sites to shape and initiate change towards a sustainable future by connecting them to structure and processes of economic, political, and cultural decision-making; and (3) starting a community-led dissemination process and using the lessons learned from the project to build such capacities among communities and partners in other project sites in China.

### **Conservation Awareness in Tibet**

**Focus:** Environmental Education, Conservation Capacity Building

**Partners:** Tibet Forestry Bureau, Wildlife Conservation Society

**Funding:** WWF US

**Schedule:** Ongoing

This project was initiated to raise awareness of conservation issues and to increase people's capability and potential to affect change in and outside of Tibet. Within this project the Tibet Forestry Bureau has been issuing a quarterly newsletter on progress and emerging issues in conservation in Tibet. This newsletter serves as a tool to communicate conservation messages and needs to the public, governmental agencies, and donors. The first issue was distributed in December 2001. WWF also published and distributed posters promoting conservation awareness in Tibet.

### **Database for New and Renewable Energy Industries and Products**

**Focus:** Energy Policy

**Partners:** China Renewable Energy Industry Association (CREIA), Norwegian Computing Center

**Funding:** UNDP/GEF, WWF

**Schedule:** Initiated 2002, Ongoing

To help develop renewable energy industries, this project aims to strengthen information exchange and international contacts by developing a database of China's renewable energy industries and products. Information about renewable energy industries in Scandinavian countries also will be included in the database. WWF hopes to help promote international technology transfer, investment, and trade through the exchange of information and e-commerce. This exchange will improve the operational capacity of the Chinese Renewable Energy Industries Association (CREIA) and help stimulate the growth of renewable energy industries in China. The database will be jointly developed through the participation of renewable energy industries in Scandinavian countries (Sweden, Denmark, Norway, Finland and Iceland). While UNDP/GEF and WWF Netherlands are supporting the initial stages of the project, further funding is needed to help support this project.

### **Forest Certification**

**Focus:** Forest Management

**Partners:** State Forestry Administration, Sustainable Forestry Research Center, Chinese Academy of Sciences, Chinese Academy of Forestry

**Funding:** WWF-World Bank Alliance

**Schedule:** Initiated 2001, Ongoing

Forest certification offers China a means to move beyond the 1998 logging ban in natural forests in much of the country and toward the establishment of a sustainable domestic forest industry. This project aims to: (1) promote the development of certification standards appropriate to the Chinese context and compatible with The Forest Stewardship Council; (2) encourage the development of models and markets for forest-certified products in China; and (3) minimize the negative impacts of the logging ban outside of China, with the aim of at least 50 percent of all imported timber coming from certified forests in China. In May 2001, the first meeting of the 'Working Group on Forest Certification in China' was held in Beijing, with the State Forest Administration (as supervisor), the Sustainable Forestry Research Center, the Chinese Academy of Forestry, and WWF (which is responsible for the coordinating logistics for this working group). The group discussed developing forest certification policies and raising awareness of sustainable forestry. In December 2001, the Working Group on Forest Certification held a series of workshops aimed at forest managers. Currently, WWF is raising awareness of these issues in China through the publication of a newsletter and brochure on forest certification. An East Asia Pacific Forest Certification Web site that will include China specific guidelines in both Chinese and English. For more information on forest certification, see Forest World <http://www.forestworld.com> and WWF International <http://www.panda.org/forests4life/certify.cfm>, which contain detailed information on China's Chain of Custody companies.

### **Green Electricity Market Development**

**Focus:** Renewable Energy Technology

**Partners:** South-North Institute for Sustainable Development, China Central TV Station (CCTV)

**Funding:** Energy Foundation, WWF Netherlands, WWF China

**Schedule:** Initiated 2002, Ongoing

Green electricity, produced from new and renewable energy sources, has considerable growth potential in China. However, knowledge and experience of how to establish a green electricity market are currently underdeveloped in China, as is awareness

of this issue amongst the general public. To promote the public support of renewable energy is an important step for green electricity market development. Beijing and Shanghai have currently been selected as cities for market research, surveys, and future demonstration sites. WWF's role in this project focuses on communication, capacity building, and media campaigns. Experiences from Europe and the United States on green electricity market development are to be introduced to China with the involvement of international experts and major news agencies. News media involvement is underway. WWF and its partners also will conduct investigation and market research for green electricity.

### **A Landscape Approach to Forest Conservation in the Minshan Mountains**

**Focus:** Conservation

**Partners:** Sichuan and Gansu Forestry Departments; Sichuan Academy of Social Sciences; Sichuan Academy of Forestry; Chinese Academy of Forestry; State Forestry Administration; Chinese Academy of Sciences; Pingwu, Qingchuan, Beichuan, Songpan, Maoxian, and Jiuzhaiguo Counties in Sichuan Province; Wenxian County in Gansu Province

**Funding:** WWF US, WWF Sweden, WWF International Forest TDP

**Schedule:** Initiated in 2001, Ongoing

This project contributes to the larger-scale conservation of the forests of the upper Yangtze eco-region and aims to increase the extent and quality of the forests in the Minshan Mountains. These conservation projects are being undertaken to benefit key species, in particular the giant panda, while enhancing the livelihood security of local communities. The current plan involves working with stakeholders to prioritize and assess sites and draw up broad conservation targets. Once the sites have been established, WWF—in collaboration with local communities and other stakeholders—will look at the potential of these forests in terms of non-timber forest products, forest certification, agriculture, and tourism, in order to develop a series of different scenarios on how the area might develop in the future. The various scenarios will form the basis of negotiations between local government, communities, conservationists, and other affected groups, which will help to shape a conservation development approach for the whole Minshan Mountain area.

### **Nature Reserve Management in Tibet**

**Focus:** Conservation Management

**Partners:** Tibet Forestry Department

**Funding:** WWF US

**Schedule:** Initiated 2001, Ongoing

WWF has identified two priority eco-regions within Tibet—the Tibetan Steppe (Chang Tang) and the East Himalayas (Yarlung Tsangpo Great Canyon Nature Reserve or YCR)—and WWF is currently concentrating its efforts in the Chang Tang eco-region. Enhancing the management of these reserves within Chang Tang is key to WWF's overall goal of conserving Tibet's biodiversity while integrating the needs of local development into conservation. Key objectives in these nature reserve priority areas are: (1) protection of Tibetan antelopes and other wildlife from poaching and illegal trade; and (2) addressing the conflict between wildlife conservation and livestock raising by developing management strategies for species such as the wild ass (Kiang), wild yak, Bengal tiger, red deer, and Tibetan brown bear.

### **Promotion of Energy Efficient Buildings**

**Focus:** Energy Management, Forest Conservation

**Partners:** International Network for Bamboo and Rattan

**Funding:** WWF Netherlands, WWF China

**Schedule:** Initiated 2002, Ongoing

In southeast and southwest China, bamboo is an abundant resource available in 18 provinces. Bamboo is also cheap, locally available, and can be used as a substitute for wood and forest products. WWF aims to introduce bamboo building design, while also integrating renewable energy and energy saving measures into the designs. The building designs include schools, hotels, and residential houses for rural people of different income levels. Several potential project sites have been selected in Yunnan Province, with the first pilot project beginning March 2002 and ending August 2002.

### **Promotion of Investment Opportunities for Energy Conservation and Renewable Energy Development**

**Focus:** Energy Conservation

**Partners:** DVA Investment Management Ltd. (pending)

**Funding:** W. Alton Jones Foundation, WWF Netherlands, WWF China

**Schedule:** In Planning Stage

Lack of investment is a major barrier to energy conservation and renewable energy development in China. Funding shortages are particularly acute in projects for clean power plants, village-based biogas power plants, and household-based wind/solar generators. In this project, WWF aims: (1) to encourage the involvement of domestic and international investors in such energy conservation projects; and (2) to establish new finance mechanisms, such as investment funds for these projects. A micro-credit project for household biogas technology dissemination will be started in mid-2002 in Yunnan and Hunan provinces. This is WWF's first initiative in promoting new mechanisms for energy projects. Discussion is underway with international investors interested in new fund development.

**Qinghua University/WWF Graduate Program on the Human Dimension of Climate Change**

**Focus:** Environmental Education

**Partners:** Qinghua University

**Funding:** WWF Netherlands, WWF China

**Schedule:** Initiated 2001, Targeted Completion 2003

WWF is working with Qinghua University to train students on the human dimension of climate change. The central focus of this project is to provide training for the next generation of scientists, leaders, policymakers, and experts to work in multi-disciplinary areas of climate diplomacy, research, and policy. The first group of eight students currently is enrolled in this program and training is underway. WWF also is setting up international exchanges as another component of this training project.

**Qinling Giant Panda Focal Project**

**Focus:** Conservation Policy

**Partners:** Shaanxi Forestry Department

**Funding:** WWF Netherlands

**Schedule:** Initiated 2001, Ongoing

The Qinling Mountains in Shaanxi Province contain the highest panda population density in China and are home to approximately 10 percent of China's total wild panda population (about 120 individuals). To provide effective protection and ensure the long-term survival of this species, the Shaanxi Forestry Department and WWF are working together to create new panda reserves and establish ecological corridors to enlarge the protected habitat for the panda population in Qinling. WWF also supports the priority panda reserves to conduct monitoring and patrolling for panda population and its habitat. This project is relatively new for WWF China. WWF and its partners are currently undertaking surveys and feasibility studies for the creation of new panda nature reserves and corridors.

**Renewable Energy Business Development Training**

**Focus:** Energy Management

**Partners:** Center for Renewable Energy Development, Energy Research Institute, State Development Planning Commission

**Funding:** WWF Netherlands, W. Alton Jones Foundation

**Schedule:** Completed 2001

This project aimed to strengthen the management and marketing capacities of managers whose enterprises are involved in renewable energy technology development, production, and trade. WWF sponsored two training workshops on finance and project management for these industrial managers. The workshops included presentations by international experts on their experiences in renewable energy market development. In 2001, WWF also organized a business trip to Europe for Chinese managers of renewable energy enterprises. This exposure led to improved international contact and trade, and particularly promoted the export of Chinese renewable energy products to the European market.

**Sustainable Road Transport and Greening of the Auto Industry**

**Focus:** Environmental Policy

**Partners:** Qinghua University

**Funding:** WWF Netherlands, Center for International Climate and Environment Research (Oslo, Norway)

**Schedule:** Initiated March 2000, Targeted Completion June 2002

This project aims to encourage government policy changes in favor of sustainable transportation management and planning, as well as promote China's motor industry to move toward cleaner combustion and energy use. WWF and its partners at Qinghua University are conducting research to investigate different technology and policy options and major barriers to sustainable urban

road transportation management in China. WWF also is exploring alternative and innovative technologies that can increase energy efficiency and reduce automobile emissions. The research already has produced a number of reports that may be used for governmental policymaking in the transportation sector as well as news media campaigns. WWF will be involved in an international workshop in June 2002 on this topic.

### **Systematic Conservation Planning of the Forests in the Upper Yangtze**

**Focus:** Conservation Management

**Partners:** Chinese Academy of Forestry

**Funding:** WWF International Forest for Life Campaign

**Schedule:** Initiated 2001, Ongoing

The upper Yangtze forest eco-region is one of 25 global priority eco-regions chosen by WWF and is an important center for giant pandas as well as rare species such as the golden monkey, red panda, and clouded leopard. The area encompasses approximately 1 million square kilometers, covering all of Sichuan and Shaanxi provinces, and parts of Yunnan, Gansu, Qinghai, Hubei, and Tibet. The logging ban on natural forests in 1998 has provided a good opportunity for promoting conservation of China's forest ecosystems. However, the Chinese government is primarily focused on the immediate issue of implementing the ban, rather than making clear future plans for the protection or utilization these natural forests, which are temporarily being restricted. Moreover there is a lack of comprehensive data on the current status and distribution of key forest ecosystems and their associated social and economic conditions in this eco-region. This project is designed to identify gaps and gather the necessary information in order to help ensure the future protection of China's natural forests. Working on an eco-regional scale is important for long-term conservation success. The areas between smaller protected areas need to be linked not only because species do not necessarily live within these lines, but also because a more integrated approach takes into account agriculture, dams, and development in general. By using this eco-region approach, conservationists have greater flexibility and the ability to accept 'trade-offs' (i.e., an eco-region project would not be a complete failure if, for example, the government decided to mine in a certain protected area) when necessary while still being able to ensure the protection of species on a larger scale. Some steps to reach the goals include: (1) identifying broad goals for biodiversity conservation in the forests in the upper Yangtze eco-region; (2) formulating conservation targets for systematic conservation planning in this eco-region; (3) working out a systematic conservation plan in the eco-region; and (4) testing and developing a WWF manual for conservation planning and WWF rapid assessment and prioritization methodology in the upper Yangtze eco-region.

### **Tibet GIS Biodiversity Database**

**Focus:** Conservation Research

**Partners:** Tibet Forestry Bureau, Chinese Forestry Academy, Beijing University

**Funding:** WWF US

**Schedule:** Ongoing

In terms of biodiversity, Tibet is still an insufficiently researched area. Although many surveys have been conducted on Tibet's biodiversity, most of the information collected has been limited to inventory, and very little data has been collected on the ecology of wildlife, plants, and ecosystems. Similarly, there are statistics on people's livelihoods, land productivity, and resources use, but very little social-economic or anthropological research documenting details of people's lifestyle and recent changes, or—perhaps most importantly—people's interaction with and impact on the natural environment. Filling in this knowledge gap is necessary to make long-term conservation management strategies in Tibet. This project is particularly designed to establish a GIS database on Tibet's main nature reserves and wildlife habitats, with the aim of compiling information for better conservation decision-making. A consultant has conducted an introductory training for staff at the Tibet Forestry Bureau and the Lhasa City Forestry Bureau to explain and demonstrate the function and basic features of a GIS database. WWF China has been conducting discussions with Tibet Forestry Bureau staff on their needs in terms of management, education, and communication, with the aim of designing an effective and useful GIS database. The project design for the GIS database will be completed in spring 2002. The next stage will focus on working with the Tibet Forestry Bureau and relevant organizations to establish a GIS lab and assign specific staff to manage the lab. After the training, Tibet Forestry Bureau staff will implement the collection, compilation, and analysis of data with technical assistance from Beijing University. WWF China also will organize a workshop on Tibet's eco-region.

## PART III. U.S. UNIVERSITIES AND PROFESSIONAL ASSOCIATIONS

**AMERICAN BAR ASSOCIATION**

www.aba.org

**Environmental Governance Training Program**

**Focus:** Environmental Law

**Partners:** Center for Environmental Education and Communication of State Environmental Protection Administration, other multi-stakeholder partners

**Funding:** U.S. Department of State

**Schedule:** Initiated February 2002, Targeted Completion February 2003

In February 2002, the Asia Law Initiative Council of the American Bar Association (ABA) placed a liaison attorney in Beijing to implement an environmental governance training project. The project is providing Chinese stakeholders with training and education on environmental governance issues and includes three components. The first component will be a comparative overview of national systems of environmental management, and the different approaches which result; the second training component will be a review of emerging strategies for environmental compliance around the world; and the third will be a comparative review of roles and responsibilities of public, private, and nongovernmental stakeholders in environmental management, analyzing each sector's role in providing for public access to information and environmental justice. Training courses will take place in three regional cities and be based on environmental circumstances in each locale. (*Editor's Note: For a full description of this project see the ABA feature box in this issue of the China Environment Series*)

**CARNEGIE MELLON UNIVERSITY**

<http://www.andrew.cmu.edu/user/kf0f/china.htm>

**Air Pollution Management in Chinese Cities**

**Focus:** Air Quality Management

**Partners:** Environmental Protection Bureaus (EPBs) in Hohhot, Benxi, Taiyuan, Binzhou, and Nantong Cities

**Funding:** U.S. National Science Foundation, Electric Power Research Institute, ExxonMobil Corporation, American Petroleum Institute (through grants to Carnegie Mellon's Center for the Integrated Study of the Human Dimensions of Global Change)

**Schedule:** Initiated 1997, Targeted Completion 2002

Since the early 1970s, China has launched numerous nationwide programs to reduce airborne particulate matter (PM) in urban areas. This dissertation research project analyzes a select group of these programs in five diverse cities: Hohhot, Benxi, Taiyuan, Binzhou and Nantong. In each city, interviews were conducted with air pollution experts in the local environmental protection and other bureaus to ascertain the history of local PM control programs, their effectiveness and costs, and the relationships among various stakeholders in government and (state) industry. In addition, data were collected on ambient PM concentrations, reported PM emissions from various sources, and local fuel resources. Three PM-control programs were selected for detailed analysis: (1) retrofitting coal boilers with particulate control devices; (2) replacing raw coal with coal briquettes for cooking; and (3) replacing coal with coal gas for cooking. The costs and health benefits of each program were estimated using an integrated model of PM exposure, PM health impacts, and implementation cost. *Publications to date:* G. Sun, *Effectiveness, Efficiency and Governance: An Integrated Study of China's Air Pollution Management*, Ph.D. dissertation, Department of Engineering and Public Policy, Carnegie Mellon University, Pittsburgh, PA, 2001.

**Exposure-Based Regulation of Particulate Air Pollution**

**Focus:** Air Quality Policy

**Funding:** U.S. National Science Foundation, Electric Power Research Institute, ExxonMobil Corporation, American Petroleum Institute (through grants to Carnegie Mellon's Center for the Integrated Study of the Human Dimensions of Global Change), travel support from the Scientific Group on Methodologies for the Safety Evaluation of Chemicals

**Schedule:** Initiated 1999, Targeted Completion 2002

This research project reviews the successes and limitations of past and existing policies for particulate controls, as well as the effects of China's economic reforms and energy policies on particulate exposure and pollution management. Researchers are examining the challenge of emissions reporting, required as part of both China's pollution levy system and an emerging system for "total emissions control." In the 1980s, China instituted a nationwide system of self-reporting for industrial air pollution emissions. Within China, these data are used for national and regional planning, setting emissions permit levels, and enforcement of the national pollution levy. Outside of China, development economists frequently use such emissions data as an indicator of the environmental performance of industry. The analysis done by the project partners shows that reported emissions of particulates from hundreds of boilers in one medium-size Chinese city are unbiased for all except large sources equipped with electrostatic precipitators. Because these largest sources comprise a large fraction of total industrial emissions, however, citywide particulate emission figures underestimate emissions by roughly a factor of two.

### **Nuclear Power and the Social Dimensions of Energy Choice**

**Focus:** Energy Research

**Partners:** Tsinghua University, Chinese Academy of Science

**Funding:** W. Alton Jones Foundation, Carnegie Mellon Center for the Integrated Study of the Human Dimensions of Global Change

**Schedule:** Initiated 1998, Targeted Completion 2002

Both academic analyses and news media reporting on nuclear power in China is quite positive and includes little or no coverage of the social dimensions of nuclear power development in industrialized countries. This research project addresses this void by developing a set of papers in Chinese on nuclear power safety, public acceptance, regulation and economics. A supplemental goal is to understand and describe the forces driving nuclear energy policy in China. *Publications to date:* (for copies of these Chinese language papers, contact K. Florig at florig@cmu.edu): Z.G. Shi, Z.Y. Zhang, L. Xue, and K. Florig. (2000). "Public Acceptance of Nuclear Power." *China Soft Science*, (August); L. Xue, Z.G. Peng, and K. Florig. (2001). "Lessons from the Evolution of the U.S. Nuclear Regulatory System." *Tsinghua University Journal - Social Science Edition*; K. Florig and S. Zhao. "Competing Perspectives on Nuclear Power Safety." *Science and Technology Review*, (March); Y. Wang. (2001). "The Path of Nuclear Power Development with Uncertain Variables." *China National Condition and National Power*, (No.10).

### **CENTER FOR ENVIRONMENTAL SCIENCE AND POLICY FORUM, STANFORD UNIVERSITY**

<http://cesp.stanford.edu>

### **The Program on Energy and Sustainable Development**

**Focus:** Energy Policy, Energy Research

**Partners:** Electric Power Research Institute (U.S.); India Institute of Management; Guangdong Energy Techno-economic Research Center (China); Tata Energy Research Institute (India); James A. Baker Institute at Rice University; Council on Foreign Relations (New York)

**Funding:** Electric Power Research Institute

**Schedule:** Initiated September 2001, Ongoing

This interdisciplinary program focuses on three main research platforms: (1) the transition to commercial energy spurred by industrialization; (2) the current shift within the worldwide energy system to natural gas; and (3) the political economy of power market reform across the globe. The researchers in this program also are interested in notions of corporate sustainability, with an emphasis on firm behaviors in the energy area. This broad research agenda investigates patterns of institutional designs for energy utilization and sustainable development worldwide over long-time horizons. China is one of the major cases explored by this program.

### **CENTER FOR INTERNATIONAL EARTH SCIENCE INFORMATION NETWORK (CIESIN), COLUMBIA UNIVERSITY**

<http://sedac.ciesin.columbia.edu/china>

### **China Dimensions Data Collection**

**Focus:** Environmental Research

**Partners:** Global Change Information and Research Center (GCIRC), China in Time and Space Project

**Funding:** U.S. National Aeronautics and Space Administration

**Schedule:** Ongoing

The Socioeconomic Data and Applications Center (SEDAC) maintains access to a range of environmental and socioeconomic

data on China, including county-level administrative boundaries and associated attribute data in Geographic Information System format. A Memorandum of Understanding signed with the GCIRC of the Institute of Geographical Sciences and Natural Resources Research of the Chinese Academy of Sciences will permit updating and expansion of these data in 2002.

### **Environmental Sustainability Index**

**Focus:** Environmental Research

**Partners:** Global Leaders of Tomorrow Environment Task Force of the World Economic Forum, Yale Center for Environmental Law and Policy

**Funding:** The Samuel Family Foundation

**Schedule:** Ongoing

The Environmental Sustainability Index (ESI) provides a measure of overall progress towards environmental sustainability for most countries of the world, including China. The ESI permits cross-national comparisons of environmental progress in a systematic and quantitative fashion. CIESIN provides access to both the ESI data and to detailed documentation on the analytic framework, quantitative methodology, and data sources used to construct ESI. An online interactive mapping tool permits users to compare the overall ESI with its subcomponents and with other indicators such as the Human Development Index and the Ecological Footprint.

### **Global Population and Land Use Data**

**Focus:** Environmental Research

**Partners:** International Food Policy Research Institute, World Resources Institute, Oak Ridge National Laboratory (ORNL), Intergovernmental Panel on Climate Change (IPCC), Goddard Institute for Space Studies (GISS), Brown University; Ramsar Bureau, Wetlands International

**Funding:** U.S. National Aeronautics and Space Administration

**Schedule:** Ongoing

SEDAC maintains a number of global databases and information resources on population, land use, greenhouse gas emissions, agriculture, wetlands, and international environmental treaties that include detailed data on China and neighboring countries. Data resources include: (1) Gridded Population of the World, Version 2, and the ORNL LandScan 2000 gridded population data sets; (2) future economic and greenhouse gas emission scenarios developed by the IPCC Special Report on Emission Scenarios; (3) data from a major crop-climate modeling study at GISS; (4) spatial data on wetlands of international importance; and (5) the Environmental Treaties and Resource Indicators database. A set of peer-reviewed guides on future population projections is also available.

### **World Data Center for Human Interactions in the Environment**

**Focus:** Environmental Research

**Partners:** International Council of Science (ICSU)

**Funding:** National Aeronautics and Space Administration

**Schedule:** Ongoing

The CIESIN World Data Center (WDC) for Human Interactions in the Environment is one of nearly 50 WDCs in the ICSU World Data Center System. This WDC focuses on population and administrative boundary data, including selected national, regional, and global datasets and links to sources of data on China and neighboring countries.

### **HARVARD UNIVERSITY CENTER FOR THE ENVIRONMENT, CHINA PROJECT**

<http://www.environment.harvard.edu/china/>

### **Dynamic Economy-Energy-Environment Model**

**Focus:** Energy Research

**Partners:** John F. Kennedy School of Government and Department of Economics at Harvard University, Chinese Academy of Social Sciences, Chinese Institute of Quantitative and Technical Economics

**Schedule:** Initiated 1995, Ongoing

The team led by researchers at Harvard University has developed and continues to revise and update a dynamic computable general equilibrium model of the Chinese economy, with a special focus on energy use and emissions. Besides taking into account dynamic effects of changes in population, capital, technology and demand, the model also incorporates the dual nature of the Chinese economy—the coexistence of plan and market institutions. The team is applying the model in a number of environmental



and economic policy analyses. In one case, the model was used to simulate the impact on GDP of using of carbon taxes to reduce carbon emissions by five, ten and fifteen percent from a baseline level. Currently the model's projections also are serving as a component of a broader initiative to estimate the total damages of energy-related air pollution to human health and the economy in China (see next two studies below). A newer policy simulation being conducted on the model prepares for results of this broader initiative, seeking to set externality tax rates of PM<sub>10</sub> and SO<sub>2</sub> at their estimated marginal damages to health.

### **Economic Value of Reducing Health Risks by Improving Air Quality in China**

**Focus:** Air Quality Policy, Health Policy

**Partners:** Harvard School of Public Health, local bureaus of public health in China

**Schedule:** Initiated 1998, Targeted Completion 2002

A group of researchers of the Harvard School of Public Health, collaborating with authorities in local bureaus of public health, have used contingent valuation to estimate the economic value of preventing adverse health effects in China. Field surveys have been conducted in urban Beijing, Anqing (in Anhui Province), and the rural area surrounding Anqing. The study is estimating the population's willingness to pay in three cases: (1) to prevent a minor illness (cold); (2) a statistical case of chronic bronchitis; (3) and premature mortality. Results of this and other research will be applied to health damage estimates of the study described above to estimate total health damage of air pollution in China and its economic cost.

### **Modeling Air Quality and Policy in China**

**Focus:** Air Quality Policy

**Partners:** Division of Engineering and Applied Sciences and Department of Earth and Planetary Sciences at Harvard, Institute of Environmental Science and Engineering at Tsinghua University

**Schedule:** Initiated 2001, Targeted Completion 2005

Researchers at Harvard, with Tsinghua collaborators, are developing a high-resolution window over China within an existing global atmospheric model. This model accounts for transport of chemicals and particulates in the atmosphere by 3-dimensional motions. The regional window will capture and describe the sources of various types of gases and particles, and will allow for chemical transportation of these compounds, including the removal of species by dry and wet deposition. The model will be a powerful tool for scientific understanding of air quality with direct and important linkages to policy choices targeting both global and local pollutants—including their transboundary dimensions. To complement this model, the team is considering the feasibility of a measurement program to provide additional observational data. This could include a mobile laboratory to carry out long-term automated measurements of a range of chemical species. Data obtained would be coupled with information from occasional spatial surveys.

### **Study on the Popular Understanding and Utilization of Environmental Law in China**

**Focus:** Environmental Law

**Partners:** Harvard Law School, Zhejiang University

**Schedule:** Initiated 2001, Targeted Completion 2003

The research team is examining the manner in which environmental law and policies are communicated to, understood, and utilized by the public in China, with particular attention to urban areas. The team will conduct baseline surveys and interview-based qualitative research on the Hangzhou area of Zhejiang Province, and potentially also on Tianjin Municipality. The study will contribute to the understanding of the impact and consequences on the Chinese populace of environmental law development to: (1) create effective environmental policy; and (2) provide avenues of redress by the citizenry over the past decade. The study is an urban compliment to a multidisciplinary rural initiative of the China Project at Harvard University Center for the Environment, completed by team members and others in Anhui Province, with publication pending in 2002. This study also builds on a separate China Project study completed and published by team members in 2001, on the drafting and implementation of the revised Air Pollution Prevention and Control Law.

### **Systems Analysis of Personal Transportation Demands in Developing Countries**

**Focus:** Transportation Research

**Partners:** Division of Engineering and Applied Sciences at Harvard University, Harvard School of Public Health, Department of Environmental Science and Engineering at Tsinghua University, multiple institutions in India

**Schedule:** Initiated 1999, Targeted Completion 2005

Harvard and partner institutions in both China and India are examining the investment, technology, and policy trade-offs in meeting the demand for urban mobility in developing countries. Researchers are conducting a number of urban case studies.

One research stream is developing optimization models that take the predicted demand for person-kilometers traveled as a primary input, and seek the most cost-effective mix of transportation options to meet it, subject to a variety of adjustable policy, technology, and environmental parameters. Critical is that transport options are defined broadly, ranging from “hard” ones (e.g., engine technologies, fuel choices) to “soft” ones (e.g., traffic management, urban planning). Linked to the optimization models are Geographical Information Systems (GIS) that represent the urban plans of target cities geographically and temporally. The GIS serves a number of key purposes: (1) they will model urban growth, densification, and land-use variation; and (2) they will evaluate population proximity to transport corridors and thus human exposures to air pollutants. Such results can be combined with air pollution dose response functions to estimate total health impacts under different policy scenarios. The research initiative began with a pilot study on Beijing and subsequently broadened its focus to Delhi, India. The team is now initiating new case studies in China, including Jinan (Shandong Province), and tentatively Chengdu (Sichuan Province) or Chongqing Municipality.

### **Total Damages of Energy-Related Air Pollution to Human Health and the Economy in China: From Emissions to Human Exposure**

**Focus:** Air Quality Policy, Health Research

**Partners:** Department of Economics at Harvard, John F. Kennedy School of Government at Harvard, Harvard School of Public Health, Department of Environmental Science and Engineering at Tsinghua University

**Schedule:** Initiated 2000, Targeted Completion 2002

In a central link of the initiative to estimate the total health damages of ambient air pollution in China, a joint research team is estimating the intake fraction (IF) or exposure efficiency (EE) of air pollutants in China. This method translates emission rates of key air pollutants from key sectors into population exposures. The team is applying atmospheric dispersion models on source data gathered in five field cities and five sectors—electric power, chemicals, iron and steel, cement, and transportation. Among key source characteristics are stack heights, meteorological conditions, and population in surrounding areas. Derived and validated coefficients will be applied to sources across sectors throughout the country to estimate national average IF of each pollutant, and thus the exposed population. From this, results from earlier epidemiological studies (chiefly those by Harvard team members, including a China Project initiative completed and published in 2001) will be applied to estimate health damages from each economic sector.

### **HOFFMAN ENVIRONMENTAL RESEARCH INSTITUTE, WESTERN KENTUCKY UNIVERSITY**

<http://hoffman.wku.edu>

### **Project on Environmental Issues in Guizhou, China**

**Focus:** Environmental Research

**Partners:** Cave Research Foundation, Institute of Karst Geology, Guilin (Chinese Academy of Geological Sciences, Ministry of Land and Resources), Guizhou Normal University

**Funding:** Institute of Karst Geology, Cave Research Foundation, Western Kentucky University

**Schedule:** Initiated 1990, Ongoing

Ten collaborative study groups (seven based in China, three in the United States) have focused on two interrelated issues in Guizhou: (1) water resources and karst-related environmental problems in the areas of Guado and Liupanshui, and (2) a cave and underground river survey in Pingba and Duyun. On a 2002 study trip to western Guizhou, the American project researchers learned of the serious natural arsenic and fluorine problems in that region and the research team subsequently met with scientists at the U.S. Geological Survey working in Guizhou to explore possible collaboration.

### **Project on Karst Landscape-based Tourism and Environmental/Economic Development in Guangxi and Guizhou Provinces and the State of Kentucky**

**Focus:** Economic Development

**Partners:** Institute of Karst Geology, Guilin Tourism Development Corporation

**Funding:** Western Kentucky University, Karst Research Institute, Guilin Tourism Development Corporation

**Schedule:** Initiated 1998, Ongoing

Southwest China (Guangxi and Guizhou provinces) and south central Kentucky both have globally important karst landscapes where spectacular surface and cave landscapes offer tourism-based economic development opportunities. Seven collaborative study groups visited and met with administrators at numerous surface and cave park areas around Guilin and Lipu (Guangxi) and around Mammoth Cave National Park (Kentucky) to learn about common resource management problems and shared solutions. In 2001 the partners in this project conducted a three-day English language workshop at the Karst Institute in Guilin.

### **UNESCO Geological Correlation Program (Project #379): Karst Processes and the Global Carbon Cycle**

**Focus:** Air Quality Research

**Partners:** Institute of Karst Geology, Cave Research Foundation, U.S. National Speleological Society, Karst Waters Institute

**Funding:** Western Kentucky University; U.S. National Park Service; Institute of Karst Geology (Guilin); American Chemical Society Petroleum Research Fund; U.S. National Speleological Society; Cave Research Foundation; Karst Waters Institute

**Schedule:** Phase I Initiated 1995, Completed 1999; New Phase Ongoing

Biogeochemical processes within karst areas, which cover some 12 percent of the earth's land surface, consume carbon dioxide gas from the atmosphere, but the rates are not well known. Since 1995 the partners in this project have jointly developed new methodologies for the measurement of the karst-associated carbon sinks through seven collaborative field excursions (five in China, two in the United States). In 1998, an international conference on this project held in Kentucky attracted 110 scientists from 17 countries. In 2002, the project organizations worked in Guangxi Province to: (1) install water-monitoring equipment; (2) conduct training on the equipment and data analysis; and (3) initiate long-term monitoring of the carbon sink near Yaji (Guangxi), which will become the fifth field station of a developing global network.

### **UNESCO International Geological Correlation Program (IGCP), Project 448: Global Correlation of Karst Geology and Relevant Ecosystems**

**Focus:** Hydrogeology Research, Biogeochemistry Research

**Partners:** Institute of Karst Geology, Guilin; International Association of Hydrogeologists; International Geographical Union; International Union of Speleology; U.S. National Park Service; Cave Research Foundation; Karst Waters Institute

**Funding:** IGCP Project 448, Western Kentucky University, Institute of Karst Geology

**Schedule:** Initiated 2000, Targeted Completion 2004

Karst landscape and aquifer systems are formed on highly soluble rocks such as limestone and are characterized by such features as caves, underground rivers, and large springs. One of the world's greatest karst regions covers a half million square kilometers within eight provinces of southern China. The purpose of this UNESCO International Geological Correlation Program (IGCP) project is to enhance international communication and cooperation among scientists studying both the physical and biological components of karst ecosystems. The project is directed by a team of international scientists from the Institute of Karst Geology (China), the Hoffman Environmental Research Institute (United States), and the Centro di Studio per la Faunistica ed Ecologia Tropicale (Italy). A ten-day field excursion was organized through the karst areas of southwest China in September 2001, and international conferences are planned to take place in Spain in 2002 and Kentucky in June 2003, cooperatively with the other three primary partner international groups investigating karst issues.

### **Workshop on Geographic Information Systems (GIS) for Karst Water Resources in Southwest China**

**Focus:** Water Research

**Partners:** Institute of Karst Geology, Cave Research Foundation

**Funding:** Western Kentucky University, Institute of Karst Geology, Guilin, Cave Research Foundation

**Schedule:** Initiated 2000, Completed 2002

Geographic Information Systems (GIS) computer technology provides powerful tools for the analysis of spatial data, and is widely used in environmental, economic, and planning investigations. In 2000 this project's research team conducted a three-day workshop at the Institute for Karst Geology in Guilin on the use of GIS for water resource investigations. The workshop focused on analysis and visualization of three-dimensional relationships common in groundwater quality and quantity investigations using Arcview extensions. An outline manual detailing procedures for GIS analysis of karst underground river surveys was translated into Mandarin. A follow-up visit to Guilin in 2002 showed that the group had obtained an impressive level of sophistication with the technology, having used it to complete several significant projects, including an extensive structural karst geology analysis at the proposed site of a large airport near Guangzhou, Guangdong.

**INSTITUTE FOR ENVIRONMENTAL STUDIES, UNIVERSITY OF WISCONSIN**

<http://www.ies.wisc.edu>

**Ongoing Projects:** University of Wisconsin is a key partner with the U.S.-China Environmental Fund in two projects: Biodiversity

Conservation and Protected Area Management Project and National Parks, World Heritage Sites. For full descriptions see the International NGO Inventory in this issue of the China Environment Series.

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY—DEPARTMENT OF URBAN STUDIES AND PLANNING**

<http://web.mit.edu/dusp/www/academics/idrp/MRP/AGSresearch.htm>

**Alternative Energy-Efficient and Low-Pollution Technologies in China and Industrial Supply Chains**

**Partners:** (principle researchers in parentheses) Swiss Federal Institutes of Technology, Zürich (Hans C. Siegmann, Qian Zhiqiang), Massachusetts Institute of Technology (Karen R. Polenske, János M. Beér), University of Tokyo (Masayoshi Sadakata, Steven B. Kraines), Chinese Academy of Sciences (Chen Xikang, Yang Cuihong), Taiyuan University of Technology (Fang Jinghua)

**Focus:** Energy Efficiency

**Funding:** Alliance for Global Sustainability, U.S. National Science Foundation, China National Natural Science Foundation, MIT Center for International Studies

**Schedule:** Initiated 1999, Targeted Completion July 2003

The project touches a few significant environmental sustainability issues related to the cokemaking sector in Shanxi Province. Researchers are working at the forefront of the environmental field in terms of adapting current and developing new economic, transportation, and pollution-monitoring tools of analysis. During the past four years, the multidisciplinary team, which consists of chemical engineers, economic planners, and physicists, has been making regular field missions to China. Through case studies, plant surveys, and literature reviews, the research team is: (1) examining the alternative cokemaking technologies that are being used in the province; and (2) conducting case studies of three plants. There are more than 20 types of coke ovens in use in China. A very important aspect of this project has been developing a transportation model to examine alternative plant locations and the pollution and economic effects of the transportation of the coal to the plants and of the coke to the domestic and foreign consumer. A critical part of the work has been the plant surveys from which the team has been able to compare and analyze energy use, pollution generated, and employment involved in cokemaking over time (from 1998 to 2001) for state-owned enterprises and township-village enterprises. The team is preparing a book on this research for publication and members of the team already have published individual articles in several different journals.

**The Technology-Energy-Environment-Health Chain in China: Monitoring for Particulates in Cokemaking Plants and Worker Households**

**Partners:** (Principle Researchers in parentheses) Swiss Federal Institutes of Technology, Zürich (Hans C. Siegmann, Qian Zhiqiang), Massachusetts Institute of Technology (Karen R. Polenske, János M. Beér), University of Tokyo (Masayoshi Sadakata, Steven B. Kraines), Chinese Academy of Sciences (Chen Xikang, Yang Cuihong), Taiyuan University of Technology (Fang Jinghua)

**Focus:** Air Quality Management

**Funding:** Alliance for Global Sustainability, U.S. National Science Foundation, China National Natural Science Foundation, MIT Center for International Studies

**Schedule:** Initiated 1997, Targeted Completion 2002

The project is monitoring particulate pollution in the cokemaking sector in Shanxi Province. This project utilizes three mobile, battery-operated particulate monitors to run the pollution tests, which will be conducted both in the cokemaking plants and in the homes of cokemaking workers. One of the physicists on the research team developed two of the three mobile air-pollution monitors in use. The team is writing articles discussing the results from this testing. If funding becomes available, the team proposes to extend the project to include the health effects on the cokemaking workers and families of changes in the environmental regulations and adoption of new cleaner technologies.

**PACE (PROFESSIONAL ASSOCIATION OF CHINA ENVIRONMENTALISTS)**

<http://www.chinaenvironment.net>

**China Environment Seminar Series**

**Partners:** The World Bank, numerous environmental NGOs

**Funding:** The World Bank, corporate donations, member volunteers

**Schedule:** Initiated 1998, Ongoing

Since its inception, PACE has organized periodic seminars and workshops on a variety of topics related to China's environment.

These seminars have allowed for increased exchange of information and ideas on issues related to China's environment among PACE members and other interested parties.

### **Discussion Board**

**Funding:** Supported through member volunteer work

**Schedule:** Initiated 2001, Ongoing

Since 2001, PACE has sponsored and maintained a discussion board, which is open to the general public through PACE's Web site ([www.chinaenvironment.net](http://www.chinaenvironment.net)). This discussion board has promoted increased exchange of information and ideas on issues related to China's environment among PACE members and other interested parties.

### **PACE Listserve**

**Funding:** Supported through member volunteer work

**Schedule:** Initiated 1998, Ongoing

Since 1998, PACE has sponsored and maintained an e-mail listserv. The listserv has allowed for increased exchange of information and ideas on issues related to China's environment among PACE members and other interested parties. PACE membership is not required for participation in the listserv. To subscribe, send a blank email to [PACELISTSERVER-subscribe@yahoogroups.com](mailto:PACELISTSERVER-subscribe@yahoogroups.com). To contribute to the listserv, email [PACELISTSERVER@yahoogroups.com](mailto:PACELISTSERVER@yahoogroups.com).

### **Sinosphere Online Journal**

**Funding:** Supported through member volunteer work

**Schedule:** Initiated 1999, Ongoing

*Sinosphere Journal* is the online journal for PACE and is published at [www.chinaenvironment.net/sino](http://www.chinaenvironment.net/sino). The journal covers a wide range of topics relevant to China's environment, such as transportation, energy, trade, U.S.-China relations, air and water resources, environmental education, and NGOs in China. After a recent reorganization of the editorial board, the new *Sinosphere Journal* will resume publication in summer 2002. The journal will be distributed either electronically or by mail to nearly 1,000 PACE members around the globe.

## **PART IV. CHINESE AND HONG KONG ENVIRONMENTAL NGO ACTIVITIES**

*(Editor's Note: Several Shanghai NGOs are described in a feature box in this issue of the China Environment Series)*

### **AGRICULTURAL SERVICE AND TRAINING PIONEERING TEAM, NANKAI UNIVERSITY (TIANJIN)**

ZHANG Huiteng, [zht0695@sohu.com](mailto:zht0695@sohu.com)

**Organization Background:** The Agricultural Service and Training Pioneering Team is comprised of approximately 60 graduate students and faculty members primarily from the School of Economics and the School of International Trade at Nankai University. Their research focuses on standards and principles of agricultural production, as well as the development and utilization of natural and human resources. This university organization is carrying out projects particularly designed to strengthen the cooperation between agricultural research experts and local farmers.

### **BEIJING ENVIRONMENT AND DEVELOPMENT INSTITUTE (BEIJING)**

MA Zhong, [mazhong@public.bta.net.cn](mailto:mazhong@public.bta.net.cn)

**Ongoing Projects:** BEDI is a key partner with Environmental Defense in the Total Emissions Control and Emission Trading in China project. For a full description see the International NGO Inventory in this issue of the China Environment Series.

### **CENTER FOR BIODIVERSITY AND INDIGENOUS KNOWLEDGE (KUNMING, YUNNAN PROVINCE)**

<http://cbik.org>

**Ongoing Projects (See CES 4):** Northwest Yunnan Great Rivers Conservation and Development Project, Rangeland Management Project

### **Ecotourism and Eco-Cultural Tourism Project**

**Focus:** Conservation Management

**Funding:** Pending

**Schedule:** Initiated 2001, Targeted Completion 2006

This projects will have two main components: (1) the Geo-Architecture and Eco-Cultural Tourism Project; and (2) the Action Planning for Geo-Architecture and Bio-Cultural Conservation. The conservation and ecotourism sites will be selected by the Center for Biodiversity and Indigenous Knowledge (CBIK) together with villagers. At each site, CBIK will study the different dimensions of indigenous geo-architectural heritage and experiment with various ways to improve the local living conditions in symbiosis with the environment. Participatory courses, workshops, and textbooks will be provided to promote indigenous housing knowledge. CBIK also will implement effective regulations of developing eco-cultural villages.

### **Watershed Management Project**

**Focus:** Water Management, Water Research

**Funding:** The Ford Foundation, Rockefeller Brothers Fund, World Resources Institute (Resources Policy Support Initiative)

**Schedule:** Initiated 2001, Ongoing

This project includes two components: (1) the watershed dynamics project; and (2) the watershed governance project. The goal of the former is to understand societal and ecological dynamics in the Mekong River Basin and its secondary watersheds. This will be accomplished by establishing a Geographic Information System (GIS) database, which will be used to analyze local ecological strategies for livelihoods reacting to environmental stresses and socioeconomic constraints. GIS also will be used to assess the state of traditional natural resource management and governance systems in the basin. This analysis will help generate recommendations and guidelines for policies and resource management. The watershed governance project will focus on assessing the impacts and effectiveness of institutional and policy changes on upland watershed management in the Mekong River Basin.

### **CENTER FOR COMMUNITY DEVELOPMENT STUDIES (KUNMING, YUNNAN PROVINCE)**

WU Yusong, wuyusong@hotmail.com

**Organization Background:** Based in the southwestern province of Yunnan, the Center for Community Development Studies (CDS) works on projects that empower local communities to improve their welfare and reduce adverse environmental impacts. Currently, CDS is working with the Rural Development Institute on legal and policy approaches to land tenure on grassland and forestland projects (see CES 4). CDS also is working with government and research centers in Yunnan, Guizhou, and Sichuan provinces to implement a two-year project to identify the primary forest resource conflicts and their associated causes in southwest China. Together with the Pesticide Action Network North America (PANNA) and Pesticide Action Network Asia Pacific, CDS is active in a project to promoting ecological agriculture in China. (*Editor's Note: See PANNA's project entry in the International and U.S. NGO Activities section of this inventory*)

### **CENTER FOR LEGAL ASSISTANCE TO POLLUTION VICTIMS (BEIJING)**

WANG Canfa, clapv@public2.east.net.cn

**Organization Background:** Approved by the China University of Political Science and Law and registered at the Chinese Judicial Ministry in October 1998, the Center for Legal Assistance to Pollution Victims started operation in November 1999 as an NGO. The center is composed mainly of professors and assistant professors engaged in environmental law research and teaching at the China University of Political Science and Law. Law students and part-time legal experts and scholars from other institutions also volunteer time at the center. Professor Wang Canfa, who teaches environmental law, is presently the director of the Center.

### **Legal Assistance to Pollution Victims**

**Focus:** Environmental Law

**Funding:** Ford Foundation, Canadian Embassy in Beijing, UK Embassy in Beijing, Japan Foundation Asia Center

**Schedule:** Initiated 1999, Ongoing

The Center for Legal Assistance to Pollution Victims (CLAPV) provides legal assistance to the general public and makes substantial efforts to improve the enforcement of environmental laws in China through a variety of means: (1) A legal assistance hotline provides free legal advice to pollution victims. As of March 2002, the center had received 3,291 telephone calls (which

led to the filing of 257 cases) and replied to 163 letters; (2) legal experts at the center have published 77 advisory letters in the *China Environmental News*, *China Youth*, *Post Weekly*, *Life Weekly* and other national newspapers; published six articles on typical pollution victim cases, and; (3) cooperation with relevant news media organizations to conduct lectures on environmental law and advance the public's awareness of environmental law. For example, in cooperation with *China Environmental News* the center regularly publishes public letters concerning questions of environmental law in an article called the "Lawyer's Mailbox." Representatives from the center have held six lectures at a Beijing radio station on environmental issues and how to protect civilians' environmental rights and interests; (4) cooperation with law firms to undertake environmental cases and pay expense of proceedings and lawyer fees for pollution victims who are unable to pay for their cases; (5) research and critique for strengthening the legislation and enforcement of environmental laws in China; (6) training for the judges and administrative officials to improve their professional knowledge and raise the enforcement level of environmental laws; and (7) participation in international and national seminars of environmental law enforcement to promote international exchanges on the issue. (*Editor's Note: See Kenji Otsuka's commentary for more information on this NGO's work*)

### CHINA GREEN STUDENT FORUM

<http://www.greenchina.org>

**Ongoing Projects (See CES 4):** Consulting and Training Center for Students Environment Groups, Green Seed

#### **Training Camp for Young Environmentalists**

**Focus:** Environmental Capacity Building

**Partners:** Student Environmental Societies at Northeast University of Finance and Economy and Dalian Marine University

**Funding:** Global Greengrants Fund

**Schedule:** Initiated November 2001, Ongoing

The training camp is designed for young Chinese environmentalists to obtain necessary skills to promote environmental awareness on their university campuses. The camp's ultimate purpose is to encourage these environmentalists to join forces and learn from each other in order to protect the environment in China. Furthermore, this project aims to strengthen the solidarity of the green community and provide new opportunities and platforms for young leaders to engage in communication outside their communities. During the training sessions, students participate in various group discussions to exchange ideas and in on-site training to collect firsthand information on environmental management and conservation work.

### CHINA WILD BIRD LIBERATION FRONT (DALIAN, LIAONING PROVINCE)

WEN Bo, [chinabirding@hotmail.com](mailto:chinabirding@hotmail.com)

#### **Wild Bird Protection Campaigning**

**Focus:** Environmental Education, Conservation Capacity Building

**Partners:** China Bird Watch, Wild Bird Society of Dalian, Green Stone City (NGO in Nanjing)

**Funding:** Global Greengrants Fund

**Schedule:** Initiated November 2001

This grassroots organization is devoted to campaigning against poaching, trading, and consumption of wild birds. They also publish and distribute a biweekly newsletter, which includes educational information on birds and advocates measures to protect wild birds by, for example, creating safeguard flyways of migratory bird species.

### CHONGQING GREEN VOLUNTEERS FEDERATION (CHONGQING, SICHUAN PROVINCE)

WU Dengming, Wen Housheng, [cqbvu@sina.com](mailto:cqbvu@sina.com)

**Organization Background:** The Chongqing Green Volunteers Federation is active in a number of research, environmental education, and public awareness activities, including: (1) providing teacher training classes in schools; (2) investigating and monitoring environmental protection in natural woods along the Yangtze River and around the Three Georges Dam area; (3) establishing green schools; (4) advocating green industry; and (5) promoting public awareness of sustainable consumption and recycling within Chongqing.

### CIVIC EXCHANGE (HONG KONG)

<http://www.civic-exchange.org>

#### Addressing Cross-Border Air Pollution

**Focus:** Air Quality Research

**Funding:** Pro-bono from volunteers and researchers

**Schedule:** Completed October 2001

Civic Exchange researchers and volunteers carried out a comparative study of the Hong Kong-Guangdong and U.S.-Mexico borders investigating mechanisms that address trans-boundary air pollution. This study, which has been published on the Civic Exchange Web site, involves a critical assessment of some of the air pollution initiatives along the U.S.-Mexico border and evaluates their applicability to the Hong Kong-Guangdong situation.

#### Air Quality Monitoring for Southern China

**Focus:** Air Quality Management

**Partners:** Peking University, Georgia Institute of Technology, Hong Kong University of Science & Technology, Hong Kong Polytechnic University, Environmental Protection Department of Hong Kong SAR Government

**Funding:** Hong Kong Jockey Club Charities Trust, CLP Power, and Hong Kong Environmental Protection Department

**Schedule:** Initiated 2002

This two-year pilot project contains the following goals: (1) to study ground level ozone and fine particles in order to fill in knowledge gaps in smog and visibility problems in Hong Kong and the Pearl River Delta region; (2) to provide insight into policy relevant questions that could assist policymakers in managing regional air quality in Hong Kong and south China; (3) to strengthen the ability of public sector agencies, private businesses, and the academic scientific community to develop policies to improve air quality management; and (4) to build long-term air quality management capability in Hong Kong and Mainland China.

#### Emissions Trading in China

**Focus:** Air Quality Management

**Funding:** Pro-bono from volunteers and researchers

**Schedule:** Completed October 2001

A background paper is available on the Civic Exchange Web site to introduce the concept of emissions trading to Hong Kong readers. The paper outlines emissions trading experiences in numerous countries, including a range of experiments in Mainland China. The paper raises the possibility that Hong Kong could be an emissions trading center for the region in the future.

### CLEAR THE AIR (HONG KONG)

<http://www.cleartheair.org.hk>

**Organization Background:** Clear the Air is committed to promoting the introduction and implementation of measures to significantly reduce air pollution in Hong Kong by: (1) promoting and publicizing strong, focused community support for air pollution control measures; (2) working with government and stakeholders to find practical solutions; and (3) educating the public on the importance of the issue to their own health and wealth.

### THE CONSERVANCY ASSOCIATION (HONG KONG)

<http://www.conservancy.org.hk>

**Organization Background:** Founded in 1968, the Conservancy Association is Hong Kong's oldest environmental NGO. Its membership initially was comprised of young professionals who sought to apply pressure on the government to institute stricter pollution control and conservation laws. Today the Conservancy Association focuses on conservation and development policy, waste management, energy, and greenhouse gas problems. In these issue areas, the Conservancy Association advocates appropriate environmental policies, monitors government actions, promotes environmental education, and takes a lead in community participation. This group has 15 full-time staff and a number of unpaid volunteers running approximately 30 different campaigns a year. Since the 1980s, some of the members of this NGO sit on the Hong Kong government's Advisory Committee on Environmental Pollution.



## ENVIRONMENTAL VOLUNTEER ASSOCIATION OF SICHUAN UNIVERSITY

### Website Construction for Promoting Student Environmental Leadership and Action

**Focus:** Environmental Education

**Funding:** Elisabeth Luce Moore Leadership Program for Chinese Women Mini-Grant (application stage)

**Schedule:** Planning stage

This project is constructing a Web site targeted at members and leaders of student environmental groups in China, as well as undergraduate and graduate students, and interested citizens. It is designed to provide these groups with environmental information and leadership training, and allow them to exchange information and advice among themselves. The Web site also will be a vehicle for online consultancy and trouble-shooting.

## FRIENDS OF THE EARTH (HONG KONG)

<http://www.foe.org.hk>

**Ongoing Projects (See CES 4):** Bless the Yangtze and Yellow Rivers Project, China BELL, Earth Award

### Environmental Education Training Delegation

**Focus:** Environmental Education

**Partners:** Local environmental protection bureaus and local schools in Guizhou, Hubei, Jiangxi, and Henan Provinces

**Funding:** Personal donations

**Schedule:** Initiated November 2000, Completed 2001

This training delegation visit aimed to provide an opportunity for local teachers and students in Guizhou, Hubei, Jiangxi and Henan provinces to acquire environmental knowledge and to enhance their admiration and respect for nature. The training also aimed to inspire the teachers and students to become engaged in the green movement. Participants included people from government education and environmental bureaus, research organizations, and teaching colleges, as well as principals and teachers from kindergartens, primary, and secondary schools.

## FRIENDS OF THE EARTH, GUIZHOU (GUIZHOU PROVINCE)

YANG Jiongli, [zlbmu@sina.com](mailto:zlbmu@sina.com)

**Organization Background:** Established in 1997, this NGO had been active in environmental education activities in one of China's poorest provinces, Guizhou. Some of the major activities undertaken by the Friends of Earth, Guizhou include: (1) running a series of lectures on environmental issues in schools and colleges; (2) publishing environmental education textbooks; (3) holding student environmental education camps and bird watching activities in nature reserves; and (4) establishing the Cao Hai Ecological Education Base. Working with local businesses and government bureaus, Friends of the Earth, Guizhou has become one of the shareholders of the Cao Hai Ecological Education Base, which will be the location for future environmental education activities and camps. Friends of the Earth, Guizhou eventually will be able to subsidize their NGO from the funds raised by this educational center.

## FRIENDS OF GREEN (NANJING, JIANGSU PROVINCE)

LU Wei and WAN Lina, [luwei@discovery.cn](mailto:luwei@discovery.cn)

**Organization Background:** This relatively new NGO stresses environmental education and sustainable farming through a variety of activities, including: (1) leading walks along the Yangtze River to promote environmental awareness and protection; (2) writing and editing textbooks on environmental protection for kindergarten education; (3) constructing a protective base for precious birds and rare animals in wetlands in Jiangsu Province; and (4) establishing an organic farm in Nanjing City.

## FRIENDS OF GREEN—GREEN EDUCATION COMMITTEE OF TIANJIN MUNICIPAL ENVIRONMENTAL SCIENCE ASSOCIATION (TIANJIN)

SUN Yanjun, [sunyanjun011@sina.com](mailto:sunyanjun011@sina.com)

**Organization Background:** Some retired environmental experts and professionals took the initiative to establish the Friends of Green in Tianjin in 2000. The main activities of this NGO include: (1) conducting surveys on public environmental problems; (2) providing environmental advice to governmental agencies; (3) collecting and sharing environmental information with the public; and (4) offering legal aid to pollution victims. Support from Shell Ltd. enabled Friends of Green to organize volunteers to plant trees in the Enbebei Desert in Inner Mongolia on May Day 2001.

### FRIENDS OF NATURE (BEIJING)

<http://www.fon.org>

**Organization Background:** Friends of Nature (FON) is the first legally registered environmental NGO in China. Central goals of FON are to improve public environment awareness and to enhance environmental education among preliminary and middle school students. Through their Green Hope Action program, FON volunteers go to underdeveloped regions to conduct environmental education in rural schools. Another innovative educational initiative is FON's mobile classrooms—The Antelope and Wild Pony Busses take volunteers to rural schools and communities to lead wildlife conservation games and programming. The Better Environment Scheme program encourages primary and middle school students to design and create environmental protection projects in their communities. In addition to the regular public education activities (e.g., tree planting, bird watching, expert lectures, and summer/winter-camps), in 2001 FON published the book *Environmental Disasters in the 20th Century* and issued a new annual survey on environmental awareness reporting in Chinese newspapers.

### GLOBAL VILLAGE OF BEIJING

<http://gvbchina.org>

**Ongoing Projects (see CES4):** Green Community, China Earth Day, Green Communities, Environmental Center (**See also Green NGO and Environmental Journalist Forum Report at <http://ecsp.si.edu>**): Green Olympics.

### GREEN ASSOCIATION FOR ENVIRONMENTAL ACTION (ALSO KNOWN AS THE “GREEN ANTS”)

Yang Yang, [juancitoy@yahoo.com](mailto:juancitoy@yahoo.com)

**Organization Background:** Green Association for Environmental Action (GAEA) is a grassroots organization founded by over 60 nature lovers in Nanjing. This group has been active in conservation projects and public education since 2000. GAEA is currently pursuing official NGO status with the local government. All operational funding comes from private donations and membership fees. In its projects GAEA's main partners include the Friends of Nature and green college student groups in Nanjing.

### Butterfly Habitat Restoration

**Focus:** Biodiversity Management

**Schedule:** Initiated 2000, Ongoing

The *Luehdorfia chinensis* butterfly is a Class II protected species under China's Wild Animal Protection Law and listed under the “K” category of IUCN's Global Red List. Due to heavy habitat loss, this butterfly's population has dwindled drastically in past years. This project aims to restore the habitat of *Luehdorfia chinensis* at Niushou Mountain in Nanjing and preserve the ecosystem of this mountain.

### Green Life Campaign

**Focus:** Environmental Education

**Schedule:** Initiated 2000, Ongoing

This project aims to educate and encourage the public to incorporate environmental protection into their daily lives. There are two main components of the project. First, this NGO sets up community-based educational outreach to foster an environmentally friendly lifestyle. Efforts have been made to publicize the three “R” principles (reduce, reuse, recycle) to ensure the sorting and proper disposal of garbage, and to promote composting, organic gardening, growing of indigenous plants, animal welfare, and energy saving. The second component of the project is collaboration with supermarkets and other businesses to promote green consumption. For example, GAEA has been working on informing consumers: (1) to avoid products containing hazardous materials; (2) to buy organically grown foods; and (3) to recycle packaging materials and used batteries.

## Zijin Mountain Watch

**Focus:** Conservation Management

**Schedule:** Initiated 2000, Ongoing

Located in the eastern suburb of Nanjing, Zijin Mountain is a major tourist site in the city. The aim of this project is to preserve the rich biodiverse ecosystem of Zijin Mountain and to promote its sustainable management through guided eco-walks with tourists, monitoring of the mountain management, and news media publicity. More specifically, GAEA will evaluate new development projects, such as the reconstruction of an altar and the expansion of a guesthouse on the mountain. GAEA also will organize volunteers to collect garbage and lobby the local government to phase-out open dumping on the mountain. In addition, GAEA is developing a proposal to ban gasoline-powered vehicles in this mountain area.

## GREEN ASSOCIATION OF TSINGHUA UNIVERSITY (BEIJING)

SUN Hao, MENG Qingyu, Department of Environmental Science and Engineering, Tsinghua University

**Organization Background:** This university environmental association, founded in the mid-1990s, promotes environmental education exchanges between Beijing and Hong Kong college students, as well as several projects including: (1) the “Protect the Yellow River and Show Love to the Green” environmental awareness project; (2) ecological investigation at Mount Five Fingers in Hainan Province; and (3) activities to protect Tibetan antelopes.

## GREEN EARTH VOLUNTEERS

<http://chinagev.org>

## Tree Planting and Adoption in Inner Mongolia

**Focus:** Environmental Education

**Funding:** Ford Foundation, member donations, volunteer support

**Schedule:** Initiated March 2001, Completed April 2001

On three weekends in spring 2001, more than 210 members of the Green Earth Volunteers (GEV) from different parts of the country gathered in the Hukou area of the Inner Mongolia Autonomous Region to plant and “adopt” 3,000 trees. Among the volunteers were 50 students, 30 environmental scientists (and their families) from the China Institute of Environmental Science, and many international participants. The adoption of trees is meant to emphasize the long-term relationship between people and nature. GEV has received a two-year grant (2000–2002) of \$40,000 from the Ford Foundation for this and other activities.

## Bird Watching in Shandong and Making ID Tags for Birds

**Focus:** Environmental Education

**Funding:** Ford Foundation, member donations, volunteer support

**Schedule:** Initiated August 2000, Completed December 2000

During this project’s bird watching activities, GEV members not only learned about China’s precious indigenous cranes, but also put ID tags onto birds. This activity was a live classroom for both children and adults to become aware of the vulnerability of wild birds in China and the necessity to enforce wildlife protection regulations.

## GREENER BEIJING

<http://gbj.grchina.net>

## Internet Activism and Online Green Community

**Focus:** Environmental Education

**Partners:** Various grassroots environmental NGOs

**Funding:** Volunteer donations

**Schedule:** Initiated 1998, Ongoing

Greener Beijing was the first Chinese NGO to be primarily internet-based. Two young brothers, Song Gang and Song Xinzhou, established the Greener Beijing Web site in 1998. Through Internet technology, Greener Beijing aims to promote public environmental awareness and to act as a networking service and supplier of environmental protection information for volunteers and grassroots green NGOs. Many of the main environmental activists in Beijing have collected and shared information through this Web site. A central focus on the Web site has been municipal waste problems and the pollution from used batteries. Greener Beijing has helped environmental volunteers in Fujian, Liaoning and other provinces to mobilize the public to collect solid waste

and used batteries. Important online campaigns in the past few years that Greener Beijing has initiated and been actively involved in include: (1) Save the Tibetan Antelope (since January 2000); (2) A Green Beijing for Green Olympics together with graduate students at the Environmental Science Department, Tsinghua University (since April 2000); (3) Greener Beijing Tableware Bag Action (since September 2000); (4) Publicity Tour Music Calls for Environmental-Friendly Living (since November 2000); and (4) Say No to Wild Tortoise Products from Hainan Yangshengtang Pharmaceuticals (since 2001). With two prominent Chinese NGOs—the South-North Institute for Sustainable Development and Global Village of Beijing—Greener Beijing also launched the Green Power Campaign to promote the awareness and use of clean and energy-efficient products in China. To better connect with the members of its virtual community, Greener Beijing organized many tree-planting, camping, and social activities in 2001. Invited by the Knowledge Workshop of the *Beijing Evening* (a major daily newspaper in Beijing), Greener Beijing also holds periodic environmental forums, which consist of speeches, and discussions on different topics from sand storms and the Green Olympics to green NGO development.

#### **GREEN FRIENDS ASSOCIATION (SHIJIAZHUANG, HEBEI PROVINCE)**

ZHANG Zhongming, GAO Hongwei, ghw@jingying.com.cn

**Organization Background:** This relatively new NGO is active in a wide range of activities in Shijiazhuang City and the surrounding suburbs, including: (1) tree-planting along dry rivers in suburban areas; (2) fundraising for cleaning the canal in Shijiazhuang; (3) environmental education exhibitions and textbooks; (4) establishing “Green Schools” in the city; and (4) presenting the “the Daughter of the Earth” award to area conservationists.

#### **GREEN HOPE (SHAN NUO HUI)—THE SCIENTIFIC EXPLORATION AND OUTDOOR LIFE SOCIETY OF BEIJING FORESTRY UNIVERSITY (BEIJING)**

FAN Yingying, senol@263.net

**Organization Background:** Since 1995, members of the Green Hope have been actively involved in grassroots movements in Beijing protecting the golden monkey and Tibetan antelope. They also organized a scientific investigation of Xiaoluanhe River in 1995 and environmental education programs for children in poor areas of Gansu Province and Inner Mongolia in 2000. In Beijing, they have launched various public campaigns promoting recycling, reducing paper cards to save the forest, and giving up disposable wooden chopsticks.

#### **GREENPEACE—CHINA (HONG KONG)**

<http://www.greenpeace-china.org.hk>

**Organization Background:** Greenpeace China undertakes non-violent direct actions to protest where environmental damage is taking place. Current projects include campaigns for: (1) building a toxic-free Pearl River Delta; (2) improving water quality in Dongjiang River; (3) stopping genetically modified food; (4) and banning waste incineration in Hong Kong.

#### **GREEN PENG CHAU ASSOCIATION (HONG KONG)**

<http://www.greenpengchau.org.hk>

**Organization Background:** This group, formed by a group of young people who returned to Peng Chau Island after study abroad, is committed to protecting and promoting the sustainable development of their island home, while simultaneously preserving cultural traditions. A multi-purposes education center is under construction and one active project encourages local families to rent empty wasteland and plant gardens.

#### **GREEN PLATEAU INSTITUTE (YUNNAN PROVINCE)**

SHI Lihong, zhinong@public.km.yn.cn

#### **Conservation and Community Development in Zhenxi District**

**Focus:** Conservation Management, Environmental Education

**Funding:** WWF China Programme, The Nature Conservancy, The Hong Kong Conservancy Association, Institute of International Education, Global Greengrants Fund

**Schedule:** Initiated 1999, Ongoing

Zhenxi district in northwest Yunnan is an area rich in biodiversity. Through environmental education and other projects, Green Plateau Institute aims to increase local people's environmental awareness and promote sustainable development. Their main ongoing projects include: (1) Diqing Prefecture environmental education teacher training; (2) Diqing Prefecture Elementary School "Love and Protect Diqing's Environment" essay and picture contest; (3) Naren Village villager mountain patrol project; (4) Naren Village redesign of traditional housing project; and (5) Naren Village women's weaving project.

### **GREEN POWER (HONG KONG)**

<http://www.greenpower.org.hk>

**Organization Background:** Green Power opened the Chinese White Dolphin Resource Center in 1997, so as to raise public concern about this endangered dolphin. This Hong-Kong based NGO also joined hands with the Guangzhou Environmental Protection Bureau and the Guangzhou Research Institute of Environmental Protection to establish the Green Field Ecological Education Center, which facilitates the exchange of green education and promote sustainable development awareness between Hong Kong and Mainland China.

### **GREENRIVER (SICHUAN PROVINCE)**

<http://green-river.org>

#### **Conservation of the Source of the Yangtze River**

**Focus:** Conservation Capacity Building

**Partners:** Various Green NGOs, Chinese school and college student associations

**Funding:** Friends of the Earth, Hong Kong; International Fund for Animal Welfare; corporate and individual donations

**Schedule:** Initiated 1994, Ongoing

GreenRiver aims to protect the source of the Yangtze River through a variety of projects, including: (1) construction of an ecological monitoring station in the Tongtian River Basin (1994) and the Suonandajie monitoring station in the northern river basin of the Yangtze headwaters (1996); (2) cooperation with local scientific research organizations and journalists to survey and research the quality of the Yangtze River headwaters in order to accumulate baseline data on the health of the river and to help design an effective environmental protection plan for the basin; (3) establishment of monitoring stations to assist local governments in developing anti-poaching patrols; and (4) recruitment of volunteers to educate local rural communities and tourists about the threats to the Yangtze River ecosystem. In 2001, GreenRiver launched a volunteer system at the Suonandajie station in which every year 30 volunteers from the local community and beyond will be recruited to maintain the operation of the station, train local people, and participate in conservation work. In addition to private donations and foundation support, Yang Xin (the founder of GreenRiver) has used money from sales of two of his photo-essay books on the Yangtze River to improve the Suonandajie Protection Station and support other activities. GreenRiver was formally registered as an NGO in 1999.

### **GREENSOS FUND**

<http://www.greensos.org>

#### **Mini Grants for Student Environmental Groups**

**Focus:** Environmental Capacity Building

**Funding:** \$3,000 (ECOLOGIA)

**Schedule:** Initiated 2002, Targeted Completion 2004

Thirteen former leaders of student environmental groups from western Chinese universities assisted in the establishment of the Greensos Fund Council in March 2002. This council will review grant applications and manage the distribution of funding to ten student environment initiatives in six western provinces and Chongqing Municipality. As of the 15 April 2002 deadline, 23 proposals from 15 universities and individual organizations were received. Evaluations of the Greensos Fund Council will be open to the public. Approved proposals include:

- Guangxi Medical University (Nanning City)—Rejecting Consumption of Guangxi's Wild Life is a project consisting of surveys, newspaper articles, educational shows, lectures, and posters;
- Northwest University of Politics & Law Debate Competitions (Xi'an City)—lectures and posters on environmental education;
- Guizhou University (Guiyang City)—the establishment of the first environment education corner in Guizhou university;
- Xi'an Institute of Science & Technology (Xi'an City)—Behavior Art Show. This show will feature garments made from garbage

and will be performed in universities and the city center in Xi'an; and,

- Lanzhou University (Lanzhou City)—survey and public education on air pollution in Lanzhou City.

### GREEN STONE CITY (NANJING, SICHUAN PROVINCE)

<http://www.green-stone.org>

**Organization Background:** Green Stone City, located in Nanjing, grew out of a virtual forum for environmental protection groups and university student volunteers in Jiangsu Province. Since its founding in September 2000, Green Stone City has held regular environmental forums for college students, consultations, and campus mobilizing activities. Green Stone City is now moving toward a united force of grassroots environment protection initiatives in the entire province.

#### Promoting Public Environmental Awareness

**Focus:** Environmental Education

**Partners:** Nanjing Environmental Protecting Communication and Education Center (under Nanjing EPB), various universities and NGOs in Nanjing, Beijing, Shanghai and Xiamen

**Funding:** Volunteer and business donations, consultation fees, grants from Global Greengrants Fund

**Schedule:** Initiated 2000, Ongoing

Through a network of college student associations, Green Stone City has managed to organize well-attended educational activities such as: (1) the Green Stone Training School; (2) Saving Baiji Dolphin and Luehdorfia Butterfly programs; (3) Nanjing Bird Conservation Newsletter; (4) Community Environmental Health Assessment program; (5) Nanjing Universities Environmental Education Tour; and (6) training courses with the Chinese staff from Roots and Shoots. This NGO also has led various plastic bag, paper, and battery reduction campaigns, as well as a broader campaign promoting Nanjing citizens to support the sustainable development of the Zijin Mountain and Qinhuai River. Green Stone City also has initiated some investigations into the ecological quality of the Yangtze River near Nanjing and a study into the illegal markets of wild animals in Nanjing.

### GREEN-WEB (BEIJING)

<http://www.green-web.org>

#### Online Activism and Environmental Protection Outreach Initiatives

**Focus:** Environmental Education

**Partners:** Various grassroots environmental NGOs and corporations

**Funding:** Private and corporate donations

The Green-web is a nonprofit independent Web site dedicated to environmental issues, initiated by several (now graduated) Chinese university students. Green-web aims to promote environmental education and hands-on environmental protection projects, and most importantly to bridge the gaps between grassroots environmental groups and organizations in China. Currently, there are two fulltime staff at Green-web and several volunteers that carry out the following outreach programs: (1) waste battery collection—in cooperation with a Beijing garbage recycling center, they have launched battery collecting campaigns and sparked the placement of battery collection containers in local communities and elementary schools; (2) green life activities—Green-web holds workshops in local communities on environmental protection activities such as water and energy saving, paper reuse, animal protection, and safe use and disposal of chemicals; (3) tree planting—Green-web has organized tree planting at the Deer Garden and other areas in Beijing. They plan to set up a tree planting center this year; and (4) bird watching—Green-web wishes to set up programs to expose urbanites to nature and wildlife and enhance their environmental awareness.

### GREEN YANBIAN (YANBIAN, JILIN PROVINCE)

LI Qiang, [gryk612@hanmail.net](mailto:gryk612@hanmail.net)

**Organization Background:** This relatively new environmental NGO focuses its activities on environmental education, practical field investigation, and green patrolling. Green Yanbian works with the Green Yanbian student association at Yanbian University in Jilin Province.

### HAND-IN-HAND EARTH VILLAGE (BEIJING)

<http://www.childrenandearth.org.cn>      <http://www.dqc.org.cn>

## **Building Hand in Hand Earth Villages at Schools**

**Focus:** Environmental Education

**Partners:** Chinese Aid Committee for the Culturally Disadvantaged, National Working Commission for Children, *Chinese Children's Newspaper (Shaonian Bao)*

**Funding:** Hong Kong Asia Agriculture Research and Development Fund; Japanese Embassy; Community Volunteer Fund of the GE Corporation (China); Dow Chemical (China) Investment Co. Ltd.; 2000 Ford Motor Environmental Protection Award; 2001 Earth Award

**Schedule:** Initiated June 1997, Ongoing

The long-term goal for the Hand-in-Hand Earth Village is to create hands-on environmental educational programs for Chinese grade school students. Hand-in-Hand Earth Village engages the students in environmental protection by creating Earth Villages at their schools and coordinates with teachers at more than 200 schools throughout China to set up recycling activities within each school. In these recycling programs some students run the recycling collection and sorting station, others take on the role as accountants and journalists, and one student acts as a mayor to coordinate all of these activities. Recyclable products collected by the students are sold to recycling companies and the proceeds from these sales are contributed to the construction of Hand-in-Hand Environmental Protection Primary Schools in poverty stricken areas of China. (*Editor's Note: See Jane Sayer's commentary in this issue of the China Environment Series for more information on this NGO*)

## **INSTITUTE OF HUMAN ECOLOGY, CHINA (BEIJING)**

<http://www.ihe.org> Dr. Diane CHANG, [ihe@163bj.com](mailto:ihe@163bj.com)

**Organization Background:** The Institute of Human Ecology (IHE) focuses on facilitating communication on environmental and ecological issues amongst government agencies, industry developers, and academic institutions. IHE provides a forum to broadcast cross-sector environmental and sustainable development initiatives, which helps provide useful information for developing policies, regulations, and new concepts in the field.

## **PESTICIDE ECO-ALTERNATIVES CENTER OF YUNNAN THOUGHTFUL ACTION (YUNNAN PROVINCE)**

<http://www.panchina.org>

### **China Pesticide Action for NGOs Development**

**Focus:** NGO Capacity Building

**Partners:** Yunnan Entomological Society

**Funding:** Rockefeller Brothers Fund

**Schedule:** Targeted Initiation 2002 (Currently in planning stage)

This program aims to help improve the skills and abilities of pesticide NGO activists, as well as promote the development of a coalition of individual pesticide campaigners and NGOs throughout China. A China Pesticide Issues Forum is being planned to bring together the key NGO activists concerned about pesticide issues. This forum will meet once or twice a year and publish summaries of the meetings in both Chinese and English.

### **Pesticide Alternatives—Research, Training, and Demonstration Projects**

**Focus:** Agricultural Training

**Partners:** Yunnan Entomological Society, Pesticide Action Network of North America (PANNA), Pesticide Action Network of Asia Pacific (PANAP)

**Funding:** PANAP, PANNA, Rockefeller Brothers Fund

**Schedule:** Ongoing

This program directly aims: (1) to advance and extend ecologically and economically sound alternatives to chemical pest control; (2) to balance pest populations by reducing pesticide use in agricultural practices; (3) to protect biodiversity, and eventually enhance the capacity of natural ecosystems. The technical training and services set up by this project will focus on the implementation of ecologically-based alternatives and integrated pest management (IPM) systems through community-based farmer field schools and green demonstration villages. The objectives of providing training on alternative and ecologically-sound agriculture is to help farmers learn how: (1) to use insect biodiversity protection; (2) to adopt biological control methods and IPM systems; (3) to produce non-toxic or less-toxic safe agricultural products; and (4) to realize the potential of economic profits from non-toxic agricultural products.

### **Policy Development and Advocacy**

**Focus:** Agricultural Research, Environmental Policy

**Partners:** Yunnan Entomological Society, PANNA, PANAP

**Funding:** Rockefeller Brothers Fund

**Schedule:** Targeted Initiation 2002 (Currently in Planning Stages)

This program aims to explore and study policies and strategies of pesticide issues and organic agriculture development in order to provide recommendations to Chinese policymakers and governmental agencies.

### **Public Education and Campaigns Against Pesticides**

**Focus:** Environmental Education, Health Research

**Partners:** Yunnan Entomological Society, PANNA, PANAP

**Funding:** PANAP, PANNA, Rockefeller Brothers Fund

**Schedule:** Ongoing

This program will focus on educating the public about the adverse effects of pesticides on food safety, human health, biodiversity, and the environment. This program also will stress the importance of creating market demands for organic food and establishing stronger regulations for pesticide residues on agricultural products and pesticides. This program will promote general green education, for pesticide issues have not yet received enough attention from the news media, the government, or the public in China. Focusing on consumers, farmers, and students, the Pesticide Eco-Alternatives Center (PEAC) will apply community-based participatory educational methods to realize its goals, including an interactive Web site, mass media advocacy, and information distribution. A pesticide action network of China to collect and publish pesticide information and data is greatly needed in China. The Yunnan Entomological Society has constructed a Web site as partially preparation for such a national/transnational network.

### **PRODUCE GREEN FOUNDATION (HONG KONG)**

<http://www.producegreen.org.hk>

**Organization Background:** The Produce Green Foundation promotes green lifestyles through the concept of organic farming. Produce Green Foundation has set up two organic farms (with a total area of 360,000 square) feet in the New Territories of Hong Kong—one farm is in Fanling and one in Hok Tau. The latter farm is opened to visitors everyday and fresh organic vegetables are available for purchase. In addition to maintaining the farms, the foundation also has published books, periodicals, and pamphlets on gardening, food, and green living.

### **SAUNDERS GULL PROTECTION ASSOCIATION OF PANJIN (PANJIN, LIAONING PROVINCE)**

LIU Detian, *Panjin Daily*, Xinglongtai District, Panjin City, Liaoning Province

**Organization Background:** Focusing on saving and protecting endangered black-month gulls this organization: (1) encourages its members to conduct scientific study and participate in academic exchanges on the black-mouth gulls; and (2) spreads and shares scientific knowledge of the black-mouth gulls through information networks and cooperating with other organizations both within China and abroad.

### **SOUTH-NORTH INSTITUTE FOR SUSTAINABLE DEVELOPMENT (BEIJING)**

<http://www.snisd.org.cn>

**Ongoing Projects (See CES 4):** Demonstration Project to Commercialize Biogas Technology in Baima Snow Mountain Nature Reserve, Yunnan Province Promoting Green Electricity in Beijing and Surveying the Potential Consumer Demand for Green Electricity

**New Projects:** In this issue of the *China Environment Series* see international NGO inventory entries for Natural Resources Defense Council (Fuel Cell Vehicle Development and Commercialization), Atlantic Council (Clean Air for China and India), and Center for Resource Solutions (Green Market Development) for projects in which the South-North Institute for Sustainable Development is a key partner.



### **TAI O CULTURE WORKSHOP (HONG KONG)**

G/F, 54 Wing On Street, Tai O, Lantau, Hong Kong

**Organization Background:** The Tai O Workshop serves as a gathering place for local residents on Tai O Island where members can participate in promoting their island's traditions, culture, and sustainable development through various research and cultural exchange activities.

### **TIBETAN ANTELOPE INFORMATION CENTER**

<http://www.taic.org>

**Ongoing Projects (See Green NGO and Environmental Journalist Forum Report at <http://ecsp.si.edu>):** Information Dissemination, Volunter Activists

### **VOLUNTEERS ASSOCIATION OF ENVIRONMENTAL PROTECTION OF YUEYANG CITY (YUEYANG, HUNAN PROVINCE)**

WANG Zhoujian, Yard of WuLi Gateway Sanatorium for the PLA officers of Yueyan, Hunan Province

**Organization Background:** The core activities of the Volunteers Association of Environmental Protection of Yueyang has been: (1) establishing the Green Schools, Green Families and Green Communities projects; (2) organizing celebrations on environmental holidays; and (3) promoting public awareness to decrease their consumption by following the reduce, reevaluate, reuse, recycle and rescue principles. They also have founded another organization called Friends of Wetlands in Yueyang.

### **VOLUNTEER MOTHERS FOR ENVIRONMENTAL PROTECTION ASSOCIATION (XI'AN, SHAANXI PROVINCE)**

WANG Mingying and BAN Li, [sxmmhb@163.net](mailto:sxmmhb@163.net)

**Organization Background:** The Xian-based Volunteer Mothers for Environmental Protection Association has for the past four years carried out a wide range of regular activities including: (1) Million Mothers, Family Tree-Planting; (2) Pick up a Green Hope project in 100 schools throughout China; and (3) created a nature conservation center and six demonstration projects on woodland protection. This NGO also operates training programs for rural women to develop sustainable agriculture and green community building.

### **WWF HONG KONG**

<http://www.wwf.org.hk>

**Organization Background:** An independent part of the global WWF network, WWF Hong Kong has been working since 1981 to implement a wide range of focused conservation and environmental education programs in Mai Po Marshes and the Inner Deep Bay in the northwestern area of Hong Kong. Both of these areas have been a haven for migratory birds for many decades. More recently, WWF Hong Kong officially launched the East Asian Forest and Trade Network—EcoWoodAsia to promote timber from independently certified forest such as certification under the Forest Stewardship Council.

## **Mainland Chinese Government Organized NGOs (GONGOs)**

### **BEIJING ENERGY EFFICIENCY CENTER**

<http://www.beconchina.org>

**Ongoing Projects (See CES 4):** Barrier Removal for Efficient Lighting Products and Systems in China, China Energy and Carbon Scenarios Project, China Motor System Energy Conservation Program, Electric Power Conservation Incentive Mechanism and Policy Research in China, Strategic Partnership: Energy Efficiency Programme in China

### **China Energy Conservation Development Outline**

**Focus:** Energy Policy

**Partners:** State Development and Planning Commission (SDPC)

**Funding:** Energy Foundation

**Schedule:** Initiated 2001, Targeted Completion 2002

In order to better carry out the requirements of the Tenth Five-Year Plan and to balance the management of the market economy reforms with sustainable development, SDPC decided to formulate the China Energy Conservation Development Outline. This outline will be used to guide China's energy conservation work from 2001 to 2015. The Energy Foundation has given this project the financial support and the Beijing Energy Efficiency Center (BECon) is providing the technical supports to this project.

### **Research on the Policy and Methodology for Enterprise Energy Audit**

**Focus:** Environmental Law

**Partners:** State Economic Trade Commission (SETC)

**Funding:** Energy Foundation

**Schedule:** Initiated 2001, Targeted Completion 2002

The goals of this project are: (1) to promote the establishment and implementation of the China Energy Conservation Law, related regulations and standard systems; (2) to investigate the national policies and management frameworks for energy audits; (3) to improve the awareness of industrial and building energy conservation; and (4) to develop China's enterprise energy audit methodology and standard computer programs for energy audits. To reach these goals, the BECon team will provide national administrators with policy fundamentals to carry out the enterprise energy audit system. BECon also will provide key energy consuming enterprises with efficient tools for undertaking scientific analysis of energy consumption. In addition, BECon will conduct demonstrations and technical support for enterprise energy audits for the energy saving service organizations. Currently, this project has produced a progress report and a workshop has been held in Nanjing to further disseminate the enterprise energy audit system to local energy use management organizations.

### **CHINA ENERGY CONSERVATION ASSOCIATION**

<http://www.ceca-setc.org.cn>

### **Developing Chinese Regulatory Infrastructure Project**

**Focus:** Energy Efficiency Policy

**Partners:** The Energy Foundation, Lawrence Berkeley National Laboratory (LBNL), Chinese State Economic and Trade Commission (SETC)

**Funding:** The Energy Foundation, The Packard Foundation

**Schedule:** Initiated 1999, Ongoing

The research work for the first phase of this project has been completed, and the second phase is currently being implemented. The goal of this project is to improve the energy efficiency in key energy-intensive industry sectors in China through governmental policy instruments. The goal of Phase I was to evaluate industrial energy-efficiency policies in other countries so to assess similar policies in China and make recommendations for policy modifications. Phase II is intended to organize a team of industrial energy-efficiency policy experts to develop implementation measurements for part of the Energy Conservation Law, which were highlighted in Phase I of this project. Phase II also will develop a pilot program plan to test the concept of voluntary energy-efficiency agreements in the steel sector in Shandong Province.

### **CHINA ENVIRONMENT AND SUSTAINABLE DEVELOPMENT REFERENCE AND RESEARCH CENTER**

#### **Environmental Library and Information Center**

**Focus:** Environmental Education

**Funding:** Asian Development Bank, Mitsubishi Foundation, Japan Foundation, NEC, Centrum für Internationale Migration

**Schedule:** Initiated 2000, Ongoing

China Environment and Sustainable Development Reference and Research Center (CESDRRC, which is affiliated with the Center for Environmental Education and Communication within China's State Environmental Protection Administration) set up a public library and information center for environmental research in 2000. In March 2002, two German experts from Center for International Migration (Centrum für Internationale Migration, an organization financed by the German Ministry for Economic Development) joined CESDRRC to assist with environmental education and research programs.

## Environment Research Sponsorship and Training

**Focus:** Environmental Education

**Partners:** Researchers from German Organizations: CIM and ASA-Carl Duisberg-Gesellschaft (ASA-CDG)

**Funding:** CIM, German Heinrich-Böll-Foundation, ASA-CDG

**Schedule:** Ongoing

Examples of research and training programs sponsored and coordinated by CESDRRC include: (1) an organic food consumer guide for Beijing to be published in early 2002; (2) a monthly newsletter (since April 2001), public lectures, and workshops on various topics; (3) training courses for environmental educators focusing on environmental management for schools, news media competence, and education on water issues to be held in May and October 2002; (4) a study tour for environmental educators to Germany in June 2002; (5) consultant work on environmental education for other Chinese institutions (e.g., EU-China Liaoning Integrated Environmental Protection Programme); (6) environmental lectures for schools and universities; and (7) environmental English courses.

## CHINA FORUM OF ENVIRONMENTAL JOURNALISTS (BEIJING)

<http://hjix.zhb.gov.cn>

**Organization Background:** The mission of the China Forum of Environmental Journalists is to: (1) unite environmental journalists across the country; (2) enhance education and publicity for environmental protection; (3) contribute to raise people's environmental awareness; (4) carry out academic exchange and cooperate with international journalist organizations (e.g., Asia-Pacific Forum of Environmental Journalists), NGOs, and environmental journalists, as well as environmental journalists in Hong Kong, Macao, and Taiwan.

## CHINESE SOCIETY FOR SUSTAINABLE DEVELOPMENT (BEIJING)

CHEN Kun, [chenkun@acc21.edu.cn](mailto:chenkun@acc21.edu.cn)

**Organization Background:** Major activities of the Chinese Society for Sustainable Development (CSSD) include: (1) drafting and implementing China's Agenda 21; (2) establishing five special committees stressing five key areas for sustainable development in China (water, human settlement, ecology and environment, agriculture, and natural disaster reduction and prevention); (3) providing consultant services for the scientific communities on sustainable development in China; (4) networking internationally (e.g., participation in NGO forums at UN environmental meetings and conferences); (5) operating training courses for decision-makers and students; and (8) publishing education periodicals, (e.g., *CSSD News Letters*, *CSSD Journal: Chinese Population, Resources and Environment*, *CSSD Annual Essay Collection for Sustainable Development in China*).

## HANGZHOU INTERNATIONAL NETWORK ON SMALL HYDROPOWER (HANGZHOU, ZHEJIANG PROVINCE)

<http://www.inshp.org>

### Green Villages

**Partners:** Renewables for Development, Various Local Governments

**Focus:** Renewable Energy, Rural Development

**Funding:** Total 55 million RMB [bank loans (30%), Chinese central government (10%), provincial governments (10%), county governments (10%), villages (20%), foreign sources (20%)]

**Schedule:** Ongoing

This project is a rural environment protection project conducted by the International Network on Small Hydro Power (IN-SHP) in poverty-stricken areas in western China: (1) Gannan and Zhangye regions in Gansu Province; (2) Zhengyuan and Wenshan regions in Guizhou Province; (3) Ya'an region in Sichuan Province; (4) Jiuxiu County in Guangxi Zhuang Minor Nationality Autonomous Region; and (5) Chengzhou and Huaihua regions in Hunan Province. The focus of the project is the exploitation of small hydropower resources, which is expected to: (1) substitute wood/grass energy with electricity; (2) accelerate the overall development of mountain, water, forestry resources; and (3) improve transportation in small river basins and thereby develop the local economy and protect the rural environment. IN-SHP will select 10 pilot villages from these regions to conduct the program, which aims to combine small hydropower exploitation with environmental protection and economic development. The clean, environment-friendly renewable energy will be used to replace the environment-unfriendly fossil fuel with small hydropower.

## PART V. BILATERAL GOVERNMENT ACTIVITIES

*(Editor's Note: Unless otherwise indicated, all currency is in U.S. dollars)*

### Australia-China Environmental Cooperation

#### AUSTRALIAN AGENCY FOR INTERNATIONAL DEVELOPMENT (AusAID)

<http://www.ausaid.gov.au/>

#### **Alxa League Environmental Rehabilitation and Management Feasibility and Design Study in the Inner Mongolia Autonomous Region of China**

**Focus:** Environmental Management

**Executing Agencies:** AusAID and contractors: ACIL Australia and AACM International & Agriculture

**Partners:** Ministry of Foreign Trade and Economic Cooperation (MOFTEC), Chinese Ministry of Finance (MoF)

**Funding:** A\$1,400,132

**Schedule:** Initiated 1999, Completed March 2000

Conducted over a period of nine months this environmental rehabilitation and management study aimed to propose strategies to control and halt desertification in the Inner Mongolia Autonomous Region, and eventually restore ecological balance to degraded land areas through environmental management measures. In addition to creating the environmental management plan, the study covered elements of water use, energy supply, and public education.

#### **UN Development Programme (UNDP)/Global Environment Facility (GEF) Renewable Energy Project**

**Focus:** Energy Policy, Energy Training

**Executing Agencies:** MOFTEC for AusAID

**Partners:** Ministry of Finance for UNDP, Chinese State Economic and Trade Commission (SETC)

**Funding:** A\$4.5 million

**Schedule:** Initiated 1998, Targeted Completion 2003

This project will promote the widespread adoption of renewable energy technologies (RET) in China by removing a range of barriers to increase market penetration of the technologies. The institutions and policies created within this project aspire to strengthen China's capacity to shift from supply-oriented technology to demand-driven, investor- and consumer-friendly approaches. The project will develop market-based institutions and instruments and increase investments in RETs. Providing first-hand knowledge of instruments and institutions, the project will support pilot activities for five promising technologies, namely: (1) rural electrification by solar and wind hybrids; (2) wind farm development; (3) biogas production; (4) bagasse co-generation; and (5) solar water heaters.

#### **UNDP/GEF Wetlands Resources Management Project**

**Focus:** Biodiversity Management

**Executing Agencies:** AusAID and contractors

**Partners:** China State Forestry Administration

**Funding:** A\$2.5 million

**Schedule:** Initiated 1999, Targeted Completion 2004

This management project's main objective is to develop China's national capacity to integrate wetland conservation into the development process. The overall project will contribute to the protection of globally important wetlands. Australia's proposed contribution will fund the development of sustainable alternative livelihoods for impoverished communities in four wetland sites. This will include: (1) development of sustainable harvesting practices; (2) secondary sector processing of products; (3) improved zoning and land-use planning; and (4) involvement of local people in resource management and ecotourism. Appropriate micro-credit facilities will be designed in tandem with the alternative livelihoods packages.

### **Improved Orchard Productivity and Water-Use Efficiency Using Modern Irrigation and Tree Management Techniques in Northern China**

**Focus:** Agriculture Management, Water Conservation

**Executing Agencies:** Agriculture Victoria

**Partners:** China Agricultural University

**Funding:** A\$1 million

**Schedule:** Initiated January 1996, Completed December 2000

With the goal of promoting large crops of good-sized fruit, this project demonstrated various techniques to restrict canopy development in orchards. These techniques included high-density planting (or choice of rootstock) and giving trees minimal water during the flush of shoot growth and generous amounts of water during fruit set. This selective irrigation technique, called regulated deficit irrigation (RDI), can double water-use efficiency and therefore has considerable potential value to fruit cropping enterprises, particularly in regions such as Xinjiang in northwest China where water is scarce. RDI can be used with apples, pears, grapes, plums, and peaches.

### **New Technology for Productive and Sustainable Reuse of Wastewater for Irrigated Cropping**

**Focus:** Agriculture Research, Water Management

**Executing Agencies:** Commonwealth Scientific and Industrial Research Organization (CSIRO) Land and Water

**Partners:** Tianjin Water Conservancy Bureau, China Institute of Water Resources and Hydropower Research

**Funding:** A\$615,000

**Schedule:** Initiated January 1998, Completed December 2000

This joint study project developed new and simple procedures for treating wastewater on land so that it can be productively reused. The main technology under study in this project was FILTER (filtration and irrigated cropping for land treatment and effluent reuse). Under this project, FILTER, which was developed in Australia, was tested for use in China and Australia. The project aimed to facilitate wide-scale use of FILTER and similar wastewater treatments, optimize their application, and develop computerized wastewater management packages.

### **Regional Water and Soil Assessment for Managing Sustainable Agriculture**

**Focus:** Agriculture Management, Water Research

**Executing Agencies:** CSIRO Land and Water

**Partners:** Chinese Academy of Sciences

**Funding:** A\$1 million

**Schedule:** Initiated January 1997, Completed June 2001

Through the development of guidelines and tools applicable at the local level, this project aimed to improve water-use efficiency and reduce related land degradation in defined agricultural areas in China and Australia. The research findings from this project are being conveyed to farmers and relevant organizations in both countries. Researchers used and developed the integrating concept of "water-use efficiency" to assess and rank the productivity of dry land farming systems in both countries. This information then was utilized to create computer models, which allow the technology and the timing of irrigation to be matched with crop water requirements. The use of such models will help farmers in both countries maximize water-use efficiency and minimize the environmental hazards associated with irrigation.

### **Use of Entomopathogenic Nematodes in China to Control Chive Midges**

**Focus:** Agriculture Research

**Executing Agencies:** CSIRO Entomology

**Partners:** Chinese Academy of Agricultural Sciences, Zhongshan University

**Funding:** A\$90,000

**Schedule:** Initiated January 2000, Completed June 2001

Pests such as rice stem borers and chive midges threaten important crops in China. This project aimed to use nematodes as a commercial alternative to chemical insecticides to control these pests. The research built on previous efforts in which nematodes were successfully used to control apple moths and street tree borers in northern China. The scientists selected strains of the

*Steinernema feltiae* nematode and searched for other species that are capable of attacking rice stem borers and chive midges. Project researchers then conducted field trials on rice and chives in China and Australia.

### **Water and Nitrogen Management to Increase Agricultural Production and Improve Environmental Quality**

**Focus:** Agriculture Management, Water Management

**Executing Agencies:** Australian Department of Natural Resources and Environment

**Partners:** University of Melbourne, China Agricultural University, Chinese Academy of Sciences

**Funding:** A\$875,000

**Schedule:** Initiated January 1998, Completed December 2001

China's agriculturalists and planners face the challenge of meeting the food demands of the country's 1.2 billion people. In order to improve agricultural productivity to meet this demand China can: (1) increase in fertilizer input; (2) improve the efficiency of fertilizer use (especially nitrogen); and (3) improve the management of water for irrigation. This study project quantified water and nitrogen and potassium losses from the soil-plant systems to the environment in order to develop systems modeling and study practices for crop, water, and nutrient management. In addition, the Australian partners created training programs and generated information and policy advice on water and nitrogen management for their Chinese counterparts.

## **Canada-China Environmental Cooperation**

### **CANADIAN INTERNATIONAL DEVELOPMENT AGENCY (CIDA)**

<http://www.acdi-cida.gc.ca/>

### **Biodiversity Protection and Community Development in Inner Mongolia Autonomous Region**

**Focus:** Biodiversity Management, Environmental Capacity Building

**Executing Agencies:** CIDA and contractors

**Partners:** China's State Environmental Protection Administration (SEPA), Local Environmental Protection Bureaus

**Funding:** C\$6 million

**Schedule:** Initiated 2000, Targeted Completion 2005

The project aims to enhance the capacity of Chinese government agencies to manage nature reserves in Inner Mongolia, as well as to integrate biodiversity protection with poverty relief development efforts. In order to accomplish these goals the project contains elements of skill development (e.g., ecological monitoring and ecotourism planning) and community participation.

### **Canada-China Cooperation Project in Cleaner Production**

**Focus:** Pollution Control, Environmental Policy

**Executing Agencies:** CIDA and contractors: PricewaterhouseCoopers, SNC Lavalin, ESSA Technology

**Partners:** SETC, SEPA

**Funding:** C\$10.5 million

**Schedule:** Initiated 1996, Targeted Completion 2003

The project targets China's severe environmental degradation and industrial pollution problems by supporting the implementation of cleaner production regulations in light and chemical industries. In two pilot projects in state-owned enterprises in Anhui Province emphasis will be placed on: (1) targeting pollution prevention from the source; (2) conserving raw materials and energy; (3) eliminating toxic raw materials; (4) reducing the quantity and toxicity of emissions and waste; and (5) decreasing the pollution impact of a product along the entire life cycle of its production. For more information see the project Web site: <http://www.chinacp.com/>

### **Cooperation in Climate Change**

**Focus:** Energy Research, Energy Efficiency Capacity Building

**Executing Agencies:** CIDA

**Funding:** C\$3.75 million

**Schedule:** To be determined

Over a period of 3 to 5 years the project will focus on institutional development and stakeholder capacity-building in order to reduce greenhouse gas emissions in China. Research programs will be set up in sectors such as carbon sequestration and multilateral funding preparations. Cooperation in lowering greenhouse gas emission will fund training courses, seminars, workshops, study tours, collaborative research, Web site development, and equipment provision. The ultimate goal of the project is to help China's research institutes strengthen their capacity to devise technologies and policies on climate change.

### **Environmental Training for Integrated Monitoring and Management in the Coastal Zone of Hainan Province**

**Focus:** Environmental Management, Conservation Training

**Executing Agencies:** CIDA, University of Waterloo, University of Guelph, Wilfrid Laurier University

**Partners:** Nanjing University

**Funding:** Total: \$2,512,334, CIDA: \$1,254,986

**Schedule:** Ongoing

Under the Canada-China Higher Education Program, Canadian and Chinese universities have been collaborating to address pressing needs to enhance Chinese capabilities in integrated coastal zone management. Areas of collaboration in this project will include: (1) human resource development; (2) institutional strengthening; and (3) the improvement of information management in the context of Chinese national and provincial development strategies. A monitoring system will be established in the subtropical island province of Hainan to identify specific development and pollution impacts on the coast. The monitoring system will help prepare local officials to respond to the growing need to manage pressures on coastal resources.

### **Exploring Crop Development and Biodiversity Enhancement: Maize in Southwest China**

**Focus:** Agriculture Capacity Building

**Partners:** Chinese Academy of Agricultural Sciences

**Funding:** C\$74,500 -115,000 (Ford Foundation is a co-funder)

**Schedule:** Initiated 2000, Completed 2001

Maize is an important food and feed crop in China. The remote southwest region constitutes the center of maize genetic diversity in China. However, the region has benefited little from past research on crop and hybridization research. This project aimed to promote better cooperation between the formal government seed system and the informal seed management methods of farmers through a participatory plant breeding approach. Researchers defined the potential role of traditional knowledge systems in crop development and biodiversity enhancement and recommended ways that the formal system could help farmers (particularly women) and improve local seed varieties while maintaining local land and seed management practices.

### **Hebei Dryland Project**

**Focus:** Agriculture Management, Agriculture Research

**Executing Agencies:** CIDA, Agriculture and Agri-Food Canada

**Partners:** Chinese Ministry of Agriculture, Hebei Academy of Agriculture and Forestry Science

**Funding:** C\$4.9 million (Phase I); C\$4.94 million (Phase II)

**Schedule:** Initiated 1989, Completed 1996 (Phase I); Initiated 1996, Completed 2002 (Phase II)

This 13-year project worked to improve rural welfare by promoting environmentally sustainable and economically viable agriculture practices in the lowland plain of Hebei Province. In this drought-prone area of China, CIDA and its partners have focused on: (1) developing ecologically sound dryland management technology; (2) improving water-use efficiency; (3) protecting soil and water quality; and (4) increasing farming profitability. Phase I emphasized increasing production and initiating research in dryland management. Phase II is focused on enhancing the application of Global Information System (GIS) in land-use planning and land resource analysis. CIDA provided agricultural scientists, training, research fellowships, and equipment for this project.

### **Study on Sustainable Management Policy of China's Nature Reserves**

**Focus:** Conservation Management, Biodiversity Policy

**Executing Agencies:** CIDA, Parks Canada

**Funding:** N/A

**Schedule:** Initiated 1999, Completed 2000

This study examined and proposed changes to China's policy on nature reserves in order to address the tension between conservation and development needs. Field surveys were conducted on 12 Chinese nature reserves and Canadian national parks

to facilitate input from the Canadian experience into a set of common policies to be implemented throughout China. The recommended policies aimed to bring about harmony between biodiversity, conservation, and economic growth.

### **Sustainable Resource Development in the Tarim Basin**

**Focus:** Energy Management

**Executing Agencies:** CIDA, Jacques Whitford Environment Ltd., PricewaterhouseCoopers, Dalhousie University, Roche Ltd. Consulting, Southern Alberta Institute of Technology

**Partners:** China National Petroleum Corporation (CNPC)

**Funding:** C\$7.55 million

**Schedule:** Initiated 1997, Completed 2001

Assisting the CNPC and local governments, this project developed an ecologically sustainable energy exploration practice to help alleviate the desertification problem within the Tarim Basin area. A particular focus was placed on optimum allocation and use of water resources. Activities included the creation of comprehensive environmental management and monitoring programs.

### **Tarim Basin Desertification and Water Management**

**Focus:** Water Management, Conservation Capacity Building

**Partners:** Tsinghua University, Xinjiang Academy of Agricultural Sciences

**Funding:** C\$221,570 in grant

**Schedule:** Targeted Completion 2002

Under CIDA's Community-Based Natural Resource Management Program, Chinese universities are working with CIDA to develop mechanisms for implementing a range of institutional innovations dealing with water resource management in the Tarim Basin area. The project partners also assess the feasibility and socioeconomic impact of these new institutions at both basin-wide and local level. Two central elements of the project are capacity building in participatory methods among stakeholders and a study of water pricing. Research results are expected to lead to changes in policies, new water management organizational structures, and experiments in farming and agriculture practices to conserve water.

## **Dutch-China Environment Cooperation**

### **DUTCH GOVERNMENT, MINISTRY OF FOREIGN AFFAIRS**

<http://www.minbuza.nl/english/homepage.asp>

### **Capacity Building for the Rapid Commercialization of Renewable Energy**

**Focus:** Energy Capacity Building, Energy Conservation Policy

**Executing Agencies:** UNDP, UN Department of Economic and Social Affairs (UNDESA)

**Funding:** NLG 5,313,000, €2,393,000

**Schedule:** Initiated 1998, Targeted Completion 2003

In conjunction with two United Nations programs, this project aims to promote the use of renewable energy sources in China. By removing market barriers to renewable energy technology, the project intends to support nationwide market penetration of related technologies and stimulate a more widespread reliance on renewable energy.

### **Cleaner Production in Township and Village Enterprise (TVE) Businesses**

**Focus:** Environmental Management

**Executing Agencies:** IVAM Environmental Research Institute, University of Amsterdam

**Partners:** China National Cleaner Production Center

**Funding:** NLG 1,850,000, €833,300

**Schedule:** Initiated 1998, Completed 2001

Through application of cleaner production practices, this project aimed to improve environmental performance and monitoring in four important TVE sectors (cement, pulp and paper, food processing, and iron casting industries) in Anhui and Yunnan Provinces.



### **Environmental Technology Promotion in Tanning Industry**

**Focus:** Environmental Management

**Executing Agencies:** TNO Netherlands

**Partners:** Bureau of Townships in the Huai River Basin, Anhui Province

**Funding:** NLG 4,695,000, €2,114,800

**Schedule:** Initiated 1998, Completed 2000

Through the application of integrated clean chrome leather technology, this project sought to improve environmental performance of clusters of tannery industries in Anhui Province.

### **Forest Conservation and Community Development**

**Focus:** Conservation Capacity Building

**Partners:** Department of Forestry in Yunnan Province

**Funding:** NLG 28,765,800, €12,957,6000

**Schedule:** Initiated 1997, Targeted Completion 2002

The project aims to enhance institutional capacity in forest protection of Yunnan and develop rural community activities to reduce pressures on nature reserves and other protected areas.

## **EU-China Environmental Cooperation**

### **EUROPEAID CO-OPERATION OFFICE**

[http://europa.eu.int/comm/europeaid/index\\_en.htm](http://europa.eu.int/comm/europeaid/index_en.htm)

### **EU-China Cooperation on Control of Vehicle Emissions**

**Focus:** Air Policy

**Funding:** €838,344

**Schedule:** Initiated 1999, Targeted Completion 2002

This project focuses on the creation of comprehensive emission standards and regulations to alleviate the progressing air pollution problems in China. The ultimate goal of the project is to introduce economic levers to effectively control the emission levels from vehicles.

### **EU-China Environmental Management Cooperation Program**

**Focus:** Environmental Capacity Building

**Funding:** EU: €130 million, China: €5.9 million

**Schedule:** Initiated 2001, Targeted Completion 2005

The project includes elements of public education, technical training, as well as the operation of environmental management systems in pilot enterprises. The EU and its Chinese partners will also create and disseminate domestic and international environmental databases and networks.

### **EU-China Honghe Environmental Protection and Poverty Alleviation Project**

**Focus:** Conservation Policy

**Funding:** EU: €1.18 million, China: €750,000

**Schedule:** Initiated 1998, Completed 2000

By enhancing intra-agency cooperation in nature conservation and rural development this protection project integrated environmental protection with poverty alleviation in the Honghe river area.

### **EU-China Jiangxi Sandy Wasteland Development Project**

**Focus:** Agriculture Management

**Funding:** EU: €4 million, China: €2.4 million

**Schedule:** Initiated 1993, Completed 1998

The project targeted subtropical sandy wasteland in Jiangxi Province for development and effective erosion control measures. New agricultural initiatives were introduced to improve the living standards of the rural community through the redevelopment of the wasteland areas.

### **EU-China Liaoning Integrated Environmental Programme**

**Focus:** Environmental Capacity Building, Environmental Management

**Funding:** EU: €37 million, China: €11.5 million

**Schedule:** Initiated 1999, Targeted Completion 2003

The project aims to enhance the policymaking, management, and implementation of environmental policies in Liaoning Province. Two other components of the project are: (1) to improve public awareness of environmental problems, and (2) to finance research on water sanitation and air pollution treatment projects in Liaoning. In order to tackle pollution issues at their roots, funding is provided to facilitate clean production, waste reduction, recycling, and adoption of renewable energy resources in Liaoning's industrial sector.

## **German-Chinese Environmental Cooperation**

**GERMAN AGENCY FOR TECHNICAL COOPERATION**

**(GTZ—DEUTSCHE GESELLSCHAFT FÜR TECHNISCHE ZUSAMMENARBEIT)**

<http://www.gtz.de>

### **Energy Efficiency and Modernization of Power Distribution**

**Focus:** Energy Efficiency Management, Energy Efficiency Training

**Partners:** MOFTEC, Chinese State Power Corporation

**Funding:** 1.52 million euros (grants)

**Schedule:** Initiated 1999, Targeted Completion 2002

A testing and service center is planned under the project to: (1) test energy-efficiency performance of locally produced pumps and motors; (2) provide consulting services to the authorities for standardization and regulations for energy efficiency motors, and (3) establish two low voltage net pilot projects in Hebei Province. The project provides experts, training, equipment supplies, and other forms of technical support.

### **Pesticides Quality and Residue Control**

**Focus:** Agriculture Management, Agriculture Training

**Partners:** MOFTEC, Ministry of Agriculture Institute for the Control of Agrochemicals

**Funding:** 4.50 million euros (grants)

**Schedule:** Initiated 1995, Targeted Completion 2002

Production standards and quality of pesticides are problematic in China, which is one of the most important pesticide manufacturers in the world. With the goal of improving the quality and lowering the environmental impact of Chinese pesticides, this project combines advisory service and human resource development with supply of lab equipment and professional materials to China's national pesticides testing and evaluation agency.

### **Rehabilitation of Small Scale Hydropower Stations in Tibet Autonomous Region**

**Focus:** Energy Management, Energy Training

**Partners:** MOFTEC, Tibetan Water Resources Bureau

**Funding:** 5.11 million euros (grants)

**Schedule:** Initiated 1995, Targeted Completion 2002

This Tibet-based project makes possible direct participation of the local population in the design, management, and operation of rehabilitated and environment-friendly small hydropower plants. Informal training courses, study tours, and locally produced equipment are provided for local craftsmen and technicians as well as rural entrepreneurs.

### **Resource Protection in Nature Reserves of Sichuan Province**

**Focus:** Conservation Training, Capacity Building

**Partners:** MOFTEC, Chinese State Forestry Administration

**Funding:** 2.20 million euros (grants)

**Schedule:** Initiated 1997, Ongoing

The project seeks to reconcile nature conservation in Sichuan's Giant Panda Habitat Reserve with economic well being of the rural population. The German Agency for Technical Cooperation (GTZ) and its Chinese partners are making efforts to identify efficient agricultural production methods and develop ecological tourism with an emphasis on sustainability. Training and GIS equipment also are being provided through an integrated capacity-building program.

### **Sustainable Agriculture (Demonstration Villages)**

**Focus:** Agriculture Research, Agriculture Training

**Partners:** MOFTEC, Chinese Local Forestry Departments, County Governments

**Funding:** 2.05 million euros in grants

**Schedule:** Initiated 1999, Targeted Completion 2003

GTZ is dispatching equipment to Datong city and 10 counties to promote sustainable and ecologically sound land use by the rural population and to build the capacity of government authorities to combat soil erosion. Target groups will be trained to develop and implement a sustainable land use model in the 10 counties, supported by a participatory monitoring and evaluation system.

### **Watershed Management and Resource Protection at Miyun Lake**

**Focus:** Water Management, Conservation Training

**Partners:** MOFTEC, Chinese State Forestry Administration, Beijing Forestry Board

**Funding:** 3.58 million euros (grants)

**Schedule:** Initiated 1998, Targeted Completion 2004

The project targets the watershed of Miyun reservoir, a source of over 50 percent of the drinking water for the city of Beijing. Within the watershed, GTZ and its Chinese partners are providing advisory services related to land use planning, forestry management, watershed management, and natural resource economics. Funding is provided for procurement of training and laboratory equipment, as well as human resource development to build local capacities.

### **KREDITANSTALT FÜR WIEDERAUFBAU**

<http://www.kfw.de>

### **Beijing Solid Waste Disposal Project**

**Focus:** Environmental Management

**Partners:** MoF, Chinese Export-Import Bank, Beijing Environmental Sanitation Administration

**Funding:** Germany: 19.94 million euros (grant), China: 20.96 million euros

**Schedule:** Initiated 1994, Completed 2000

This project provided two indoor waste dumpsites, transfer stations, waste disposal vehicles, and a new composting plant for two inner city districts of Beijing. This is in line with the city's new focus on waste management policy to promote environmental protection.

### **Environmental Program Energy I**

**Focus:** Energy Efficiency, Energy Management

**Partners:** MoF, Chinese Export-Import Bank, China Development Bank

**Funding:** 25.56 million euros (soft loans), 51.13 million euros (market-rate loans)

**Schedule:** Initiated 2000, Targeted Completion 2004

To ensure environmentally compatible expansion of energy supply in China, the project aims to reduce environmental hazards and increase efficiency in production, transmission, and distribution of energy. The target group consists mainly of public companies such as power suppliers and coal producers, as well as state-owned manufacturers. A credit line is opened to finance

long-term capital investments in pollution reduction or energy-efficiency technologies such as dust filters, flue gas desulfurization plants, and turbine modernization.

### **Rehabilitation of Thermal Power Stations**

**Focus:** Energy Management, Air Quality Management

**Partners:** MoF, Chinese Export-Import Bank, Chinese Power Companies

**Funding:** Germany: 85.39 million euros (grant), China: 75.67 million euros

**Schedule:** Initiated 1998, Targeted Completion 2002

China is the world's largest coal consumer and tops the list of CO<sub>2</sub> and SO<sub>2</sub> emitting countries. In response to these emission problems, this project supports construction of flue gas desulfurization plants in major Chinese cities to reduce the high SO<sub>2</sub> emission level and the dust load.

### **Urban Sewage Disposal along the Huaihe River**

**Focus:** Water Management

**Partners:** MoF, Chinese Export-Import Bank, Municipal Governments in Huaihe River Basin

**Funding:** 30.68 million euros (soft loans)

**Schedule:** Initiated 1997, Targeted Completion 2005

Funds are made available under the project to construct communal sewage treatment plants in the Huaihe River Basin, one of the most threatened waterways in China. These funds will be sustained via cost-covering tariffs.

### **Urban Sewage Treatment in the Yangtze River Areas**

**Focus:** Water Management

**Partners:** MoF, Chinese Export-Import Bank, Municipal Governments in Yangtze River Basin

**Funding:** 25.56 million euros (soft loans)

**Schedule:** To be determined

The project aims to reduce the damage to the environment from untreated sewage in the Yangtze River Basin, which should also lower the risk of water-induced diseases in cities along the river. Funds will be made available for the construction of communal sewage treatment plants, in particular pumps, control systems, and valves. The municipalities will finance local costs for project activities.

### **Water Supply Project in Anhui Province**

**Focus:** Water Management

**Partners:** MoF, Chinese Export-Import Bank, Municipal Water Supply Companies

**Funding:** 20 million euros (grant)

**Schedule:** Initiated 1994, Completed 2000

Designed to help improve the supply of safe drinking water and prevent water-induced diseases, this project sought to simultaneously protect the natural resources in three cities in Anhui Province. Funding was provided to construct modern water works and water purification plants, which included electromechanical equipment such as pumps and control systems.

### **Windpark Program**

**Focus:** Energy Management

**Partners:** MoF, Chinese Export-Import Bank, Chinese Provincial Wind-Power Companies

**Funding:** 5.88 million euros (soft loans) , 5.88 million euros (market-rate loans)

**Schedule:** Initiated 1995, Ongoing

To encourage use of clean alternative energy sources—in line with China's own energy policy—and reduce the use of coal, the program is helping to bring into operation two windparks at seven locations in Zhejiang and Hainan Provinces, regions of high-energy consumption levels. The completed windparks will have a total capacity of 60 megawatts (MW).

## Japan-China Environmental Cooperation

### JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

<http://www.jica.go.jp/>

#### **Acid Rain Prevention Project**

**Focus:** Air Quality Training

**Funding:** N/A

**Schedule:** Initiated 2000, Targeted Completion 2004

The project consists of acid rain prevention technology training courses in Japan for Chinese environmental agency and industry personnel. Thirty percent of the cost for this training will be borne by the Chinese government. In 2000 alone, 151 Chinese received training.

#### **Afforestation Project in Sichuan**

**Focus:** Biodiversity Management, Conservation Training

**Funding:** ¥675 million

**Schedule:** Initiated 2000, Targeted Completion 2005

The project supports local afforestation activities in three cities (Xichang, Xide, and Zhaojue) along the Anning River in Sichuan Province.

#### **Environmental Conservation in the Coal Industry in Shandong Province**

**Focus:** Conservation Training

**Funding:** N/A

**Schedule:** Initiated 1997, Targeted Completion 2002

Through training of Chinese industry personnel, this project supports the transfer of modern clean coal technology to Shandong Province, a major coal-producing area in northern China.

#### **Environmental Degradation Survey of the Pearl River Delta**

**Focus:** Conservation Research, Water Research

**Funding:** N/A

**Schedule:** Initiated 1999, Completed 2001

At the request of the Chinese government, the Japanese International Cooperation Agency (JICA) helped launch a targeted survey of marine pollution in the Pearl River Delta with the aim to develop and implement water quality improvement plans.

#### **Environmental Regeneration for the Taihu Lake Area**

**Focus:** Conservation Research, Water Research

**Funding:** ¥200 million

**Schedule:** Initiated 2001, Targeted Completion 2006

This five-year project supports the implementation of biotech purification technology for integrated sewage treatment in the Taihu Lake area. Project funds cover the costs of equipment and the employment of six water experts.

#### **Japan-Chinese Cooperative Seedling & Breeding Technology Project**

**Focus:** Biodiversity Management, Conservation Training

**Partners:** Hubei and Anhui Provincial Governments

**Funding:** ¥735 million

**Schedule:** Initiated 2001, Targeted Completion 2006

The project supports dissemination of advanced breeding technology and high-quality seedlings in various Chinese southern provinces with an emphasis on fostering sustained local technical capacities, partly through longer-term assignment of experts.

### **Land Reclamation in the Loess Plateau**

**Focus:** Environmental Management

**Funding:** ¥107 million

**Schedule:** Initiated 1999, Completed 2001

The project provided technical instruction and supervision to help reclaim and redevelop wasteland in the Loess Plateau, as well as forestry and hydrological surveying.

### **Research Project on Preventing Desertification**

**Focus:** Biodiversity Management, Conservation Training

**Funding:** ¥300 million

**Schedule:** Initiated 1997, Completed 2000

The project supported research into experimental tree planting in desertified areas in Xinjiang, including providing materials and dispatching experts.

### **Research on Secondary Afforestation in Beijing**

**Focus:** Biodiversity Management

**Funding:** ¥1.01 billion

**Schedule:** Initiated 2000, Targeted Completion 2005

In view of the tension between nature conservation and the growing need for timber for China's growing economy, this project supports effective expansion and sustainable use of secondary forests by way of research and pilot project implementation.

### **Seedling Breeding in Hunan**

**Focus:** Biodiversity Management

**Funding:** ¥659 million

**Schedule:** Initiated 1996, Completed 2001

The project provided technical support and training to build up a technological basis for breeding of high-quality plant varieties and biodiversity conservation.

### **Waterway Planning and Construction in Liaoning Province**

**Focus:** Conservation Research, Water Research

**Funding:** N/A

**Schedule:** Initiated 2001, Ongoing

The Chinese government is proposing to develop the Hunhe River waterways in Liaoning Province in order to alleviate water supply problems in China's industrial heartland. JICA is sponsoring this project to assess the environmental impact of the proposed waterway changes and to design countermeasures.

### **JAPANESE BANK OF INTERNATIONAL COOPERATION (JBIC)**

<http://www.jbic.go.jp/english>

### **Benxi Environmental Improvement Project**

**Focus:** Environmental Research, Energy Management

**Partners:** Benxi Municipal Government

**Funding:** ¥8,507 million

**Schedule:** Initiated 1997, Completed 2001

In order to improve the environmental quality in Benxi City (Liaoning Province) the Japanese Bank of International Cooperation (JBIC) provided loans to construct efficient gas, heat, electricity, and water supply facilities in the city. The loans also helped to furnish factories with pollution control and environmental monitoring equipment.

### **Chengdu Water Supply Project**

**Focus:** Water Management

**Partners:** Chengdu Municipal Government

**Funding:** ¥7,293 million

**Schedule:** Initiated 1999, Ongoing

In order to meet the ever-worsening water shortages and to prepare Chengdu for the city's future water demand this project supports the expansion of the Sixth Water Purification Plant in the city.

### **Chongqing Water Supply Project**

**Focus:** Water Management

**Partners:** Chongqing Municipal Government

**Funding:** ¥6,244 million

**Schedule:** Initiated 2000, Ongoing

Under this project, JICA and the Chongqing municipal government are constructing a water supply facility in the upstream basin of the Yangtze River in the southwestern part of Chongqing. The goal of this water supply project is to meet the mounting water shortage and to prepare for the future water demand in Chongqing.

### **Gansu and Xinjiang Water-Saving Irrigation Projects**

**Focus:** Water Management

**Funding:** ¥6,000 million (Gansu); ¥14,400 million (Xinjiang)

**Schedule:** Initiated 2000, Ongoing

The project activities are designed to prevent desertification in Gansu and Xinjiang by: (1) increasing the covering of vegetation; (2) improving the living standards of farmers by increasing crop yields; and (3) helping to ease the drying of the Yellow River (Gansu) and the Tarim River (Xinjiang) by lowering water intake from the river system. These goals will be achieved by paving mud canals, installing sprinklers and other water saving irrigation equipment in current irrigation districts in Gansu and Xinjiang.

### **Guangxi Water Supply Project**

**Focus:** Water Management

**Partners:** Guangxi Autonomous Region Government

**Funding:** ¥3,641 million

**Schedule:** Initiated 1999, Ongoing

In order to respond to the growing water demands in two fast growing mid-sized cities in China—Nanning and Guilin—this project is working to construct water supply facilities to enhance each city's water supply capacity.

### **Guiyang, Dalian, and Chongqing Environment Model City Projects**

**Focus:** Air Quality Management

**Partners:** Guizhou Provincial Government, Dalian Municipal Government, Chongqing Municipal Government

**Funding:** ¥14,435 million (Guiyang); ¥8,517 million (Dalian); ¥7,701 million (Chongqing)

**Schedule:** Initiated 1999, Ongoing

As part of the Japan-China Environment Model City Initiative, these projects involve numerous pollution control activities in three cities. In order to reduce air pollution from power plants, JBIC and its Chinese partners are installing monitoring systems and constructing low sulfur clean coal production facilities (at Guiyang and Chongqing). In Dalian the project is constructing clean production steel and cement plants. These actions were proposed by a joint expert committee in an effort to improve the air quality in each city.

### **Heilongjiang Songhua River Basin Environmental Improvement Project**

**Focus:** Water Management

**Partners:** Heilongjiang Provincial Government

**Funding:** ¥10,541 million

**Schedule:** Initiated 1998, Completed 1999

The project led to the construction of sewage treatment plants and sewage pipeline networks in major cities in the Songhua River Basin. With the JBIC loan the Heilongjiang provincial government installed wastewater treatment equipment in the plants discharging pollutants into the Songhua River above the environmental standards. The loan also was used for the procurement of machinery and equipment needed for the construction of sewerage and factory wastewater treatment plants.

### **Hohhot and Baotou Environmental Improvement Project**

**Focus:** Environmental Management

**Partners:** Government of Inner Mongolia Autonomous Region, Chinese Export-Import Bank

**Funding:** ¥15,629 million

**Schedule:** Initiated 1996, Completed 1998

The purpose of the project was to improve air and water quality in Hohhot and Baotou cities in Inner Mongolia. The JBIC loan was used for the procurement of environmental protection machinery, and equipment, as well as to finance long-term loans for the implementation of the eligible sub-projects. The specific project activities included the expansion of the gas and heat supply system in Hohhot and Baotou cities and the procurement of environmental monitoring and research equipment in Baotou City. Additionally, the JBIC loan led to the extension of long-term loans through the Chinese Export-Import Bank to nongovernmental organizations that are working to improve environment investment in both cities.

### **Huai River Henan Water Pollution Control Project**

**Focus:** Water Management

**Partners:** Henan Provincial Government

**Funding:** ¥2,175 million

**Schedule:** Initiated 1997, Completed 2000

A JBIC loan was used for the procurement of machinery and equipment needed for the construction of sewage and factory wastewater treatment plants and sewage pipeline networks in the major cities in the Huai River Basin. Wastewater treatment equipment was prioritized in the plants discharging pollutants above the environmental standards in order to improve the water quality and reduce the pollution of Huai River in Henan Province.

### **Jilin Song Liao River Basin Environmental Improvement Project**

**Focus:** Water Management

**Partners:** Jilin Provincial Government

**Funding:** ¥12,800 million

**Schedule:** Initiated 1998, Completed 1999

The JBIC loan for this project was used to procure machinery and equipment needed for the construction of sewage and factory wastewater treatment plants in the major cities in the Song Liao River Basin.

### **Kunming Water Supply Project**

**Focus:** Water Management

**Partners:** Kunming Municipal Government

**Funding:** ¥20,903 million

**Schedule:** Initiated 1999, Ongoing

The project is constructing a water supply facility, in concert with construction of a dam planned upstream on the Zhangjiu River in the northern part of Kunming. This water supply facility is necessary to respond to the ever-worsening water shortage in the area and to prepare for the future water demands in Kunming.

### **Lanzhou Environmental Improvement**

**Focus:** Water Management

**Partners:** Lanzhou Municipal Government

**Funding:** ¥7,700 million

**Schedule:** Initiated 1996, Completed 1997

The purpose of the project was: (1) to help abate air pollution from coal burning; (2) to improve the water quality of the Yellow River; and (3) to ensure safe drinking water supply in Lanzhou City in Gansu Province. The project loans therefore were used to extend a gas pipelines and to construct more efficient heat-supply lines in Lanzhou. The project also led to the construction of wastewater treatment plants and the expansion of existing water treatment plants.

### **Liuzhou Environmental Improvement Project**

**Focus:** Environmental Research, Energy Management

**Partners:** Lanzhou Municipal Government, Chinese Export-Import Bank



**Funding:** ¥10,738 million

**Schedule:** Initiated 1996, Completed 1999

The purpose of the project was to improve air and water quality and urban sanitation in Liuzhou City, Gangxi Autonomous Region. Therefore, JBIC loans were used to construct a plant and facilities for natural gas supply and build a covered waste dump. The project also enabled the Chinese Export-Import Bank to extend long-term loans nongovernmental entities to undertake environmental projects in Liuzhou City.

### **Shaanxi Loess Plateau and Inner Mongolia Loess Plateau Afforestation Projects**

**Focus:** Biodiversity Management

**Funding:** ¥4,200 million (Shaanxi); ¥3,600 million (Inner Mongolia)

**Schedule:** Initiated 2000, Ongoing

These afforestation projects are designed to: (1) contribute to stable social and economic conditions in the Shaanxi Loess Plateau and Inner Mongolia Loess Plateau regions; (2) raise living standards in the region as well as in downstream areas of the Yellow River; and (3) contribute to an overall improvement of China's natural environment. These goals will be achieved by: (1) improving the region's forestation rate; (2) preventing soil erosion, and (3) raising agricultural income through planting 100,000 hectares of protection forests, timber forests, and fruit tree groves.

### **Shandong Tai'an Pumped Storage Power Station Project**

**Focus:** Energy Management

**Funding:** ¥18,000 million

**Schedule:** Initiated 2000, Ongoing

In response to surging peak loads of energy power in Shandong Province's electricity power stations, this project is designed to supply electric power efficiently while giving due consideration to environmental concerns. These goals will be achieved by building a 1000 MW pumped storage power station in Shandong Province, where air pollution is growing worse.

### **Shenyang Environmental Improvement Project**

**Focus:** Environmental Management

**Partners:** Shenyang Municipal Government

**Funding:** ¥11,196 million

**Schedule:** Initiated 1996, Ongoing

The purpose of the project is to improve air and water quality in Shenyang City, Liaoning Province. The project loan is being used to renovate the copper smelting and acid making system in Shenyang Smelter, which produces the highest level of polluting emissions in Shenyang City. The project also is extending centralized power stations for heat and electricity supply, which shall reduce the number of small inefficient boilers.

### **Suzhou Water Environmental Improvement Project**

**Focus:** Water Management

**Partners:** Suzhou Provincial Government

**Funding:** ¥6,261 million

**Schedule:** Initiated 1999, Completed 2000

The project led to the construction of a wastewater treatment plant, water-conducting, and other water facilities in Suzhou City, Jiangsu, where water pollution has become worse amid unfolding industrialization and urbanization in recent years.

### **Xiang River Basin Hunan Environmental Improvement Project**

**Focus:** Water Management

**Partners:** Hunan Provincial Government

**Funding:** ¥11,853 million

**Schedule:** Initiated 1997, Completed 2000

The project constructed sewage treatment plants and sewage pipeline networks in the major cities along the Xiang River in order to reduce pollution load in Hunan Province. This project also expanded natural gas supplies to cities in order to prevent air pollution and mitigate the effect of acid rain in the basin. Lastly, environmentally sound garbage disposal facilities were constructed in the cities.

### **Yingkou Water Supply Project**

**Focus:** Water Management

**Funding:** ¥2,504 million

**Schedule:** Initiated 2000, Ongoing

This project is designed to address current water shortage in Yingkou, which is becoming more serious every year because of economic development and population growth. These water conservation goals will be achieved by building water purification plants with a total daily treatment capacity of 120,000m<sup>3</sup> and water distribution facilities in coordination with the construction by the municipal water department of a new dam on the Biliu River exclusively for water supply purposes. These facilities will promote a stable supply of clean water and improve living conditions in Yingkou.

### **Zipingpu Multi-Purpose Dam Construction Project**

**Focus:** Water Management

**Funding:** ¥32,199 million

**Schedule:** Initiated 2000, Ongoing

Water supplies in Chengdu City are tight and this project therefore is designed to stabilize and balance the supply and demand for water in the city. The project aims: (1) to ensure water for irrigation, residential, industrial, and environmental uses; (2) to create clean energy through hydroelectric power in response to rising demand for electric power within the province; and (3) to implement flood prevention measures. These goals will be achieved by building a multi-purpose dam in the upper reaches of the Minjiang River in Sichuan Province.

## **Korean-Chinese Government Environmental Cooperation**

### **KOREAN INTERNATIONAL COOPERATION AGENCY (KOICA)**

<http://www.koica.go.kr>

### **Continuous Technical Cooperation**

**Focus:** Biodiversity Management, Conservation Training

**Partners:** Various Chinese Central and Local Environmental Bureaus and Agencies

**Funding:** N/A

**Schedule:** Initiated 1991, Ongoing

Since 1991 the Korean International Cooperation Agency (KOICA) has operated a continuous training program for Chinese environmental administrators in the form of training course and expert field visits, covering topics ranging from forestry protection to marine environmental cooperation. Over 100 Chinese environmental workers and government officers received training and technical support over this time.

### **Ecological/Environmental Preservation in Inner Mongolia**

**Focus:** Environmental Management

**Partners:** Government of the Inner Mongolia Autonomous Region

**Funding:** \$4,980,000 (loan)

**Schedule:** Initiated December 2000, Ongoing

This KOICA project aims to integrate economic and environmental agenda by building an eco-friendly farm for medicinal herbs in the semi-arid, poor areas of Inner Mongolia.

### **Forestry Project for Western China**

**Focus:** Biodiversity Management

**Partners:** Chinese central government

**Funding:** \$5,000,000

**Schedule:** Initiated 2001, Targeted Completion 2005

This 5-year project supports afforestation activities in China's western provinces that have been threatened by soil erosion and resource depletion. This project helps to ensure the sustainability of China's West Development Strategy.

### **Korea-China Project for Forest Protection and Water Resources Management in Miyun**

**Focus:** Environmental Policy, Biodiversity Research

**Partners:** Chinese Environmental Protection Administration, Beijing City Government

**Funding:** \$1,000,000

**Schedule:** Initiated 2001, Targeted Completion 2003

This pilot project supports joint research, planning, and implementation of forest protection and water resources policies in suburban Beijing, with direct impacts on the improvement of air and water quality in the capital area.

### **Meishe River Development Project in Henan Province**

**Focus:** Water Management

**Partners:** Henan Provincial Government

**Funding:** \$4,950,000 (loan)

**Schedule:** Initiated December 2000, Ongoing

This project seeks to redesign the overall development and conservation plan for the Meishe River area to reverse and prevent surface water pollution.

### **Solid Waste Disposal Project in Anshun City**

**Focus:** Environmental Management

**Partners:** Anshun City Government

**Funding:** \$2,500,000 (loan)

**Schedule:** Initiated December 1996, Ongoing

This infrastructure project is focused directly on the construction of solid waste disposal facilities in Anshun City.

## **New Zealand-China Environment Cooperation**

### **NEW ZEALAND OFFICIAL DEVELOPMENT ASSISTANCE**

<http://www.mft.govt.nz/nzoda/nzoda.html>

### **Huangpu Upper Catchment (Shanghai) Water Quality Improvement**

**Focus:** Water Management

**Partners:** Shanghai Environmental Protection Bureau

**Funding:** NZ\$500,000

**Schedule:** Initiated August 2001, Ongoing

This pilot project is funded under the New Zealand Government's Asia Development Assistance Facility. The object of this project is to create sustainable improvements to the quality of water drawn from waterways linked to the upper reaches of the Huangpu River for drinking and other domestic purposes, thereby improving the living conditions of communities living in this area. As a pilot initiative the outcomes of this project are intended to feed into wider work of future World Bank-sponsored water quality interventions.

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