

INVENTORY OF ENVIRONMENTAL WORK IN CHINA

In this fourth issue of the *China Environment Series*, the Inventory of Environmental Work in China has been updated and many new organizations have been added, especially in the nongovernmental section. Moreover, to better highlight the growing nongovernmental sector in China, this year we have placed the Chinese and Hong Kong organizations in a separate section. We will endeavor to inventory even more of China's environmental nongovernmental organizations (NGOs)—as well a greater number of Chinese government organized NGOs (GONGOs) and research centers—in next year's *China Environment Series*.

This inventory also aims to paint a clearer picture of the patterns of aid and investment in environmental protection and energy projects in the People's Republic of China. We highlight a total of 68 organizations and agencies in this inventory and provide information on 256 projects. The four categories of the inventory are listed below:

- Part I: United States Government Activities (16 agencies and 80 projects)
- Part II: U.S. and International Nongovernmental and Academic Activities (36 organizations, 76 projects)
- Part III: Chinese and Hong Kong Nongovernmental Activities (12 organizations, 50 projects)
- Part IV: Multilateral Organization Activities (4 organizations and 50 projects)

A multitude of people have contributed to the creation of this inventory. I am grateful to all of the people in the U.S. government agencies and nongovernmental organizations who generously gave their time to compile and summarize the information their organizations undertake in China. Several Woodrow Wilson Center research assistants have devoted countless hours to compiling, formatting, and proofreading this seemingly endless stream of information. Therefore, I wish to extend special gratitude to: Wu Fengshi, Gregory Bruno, Tony Sutton, and Amelie Van Den Bos. Clair Twigg, the Assistant Editor of the *China Environment Series*, was also invaluable with her fresh eyes reviewing the final version of this inventory. We have made every attempt to verify that the projects inventoried are actually taking place or will soon begin. Any updates, corrections, or inquiries regarding the inventory should be directed to Jennifer L. Turner (Editor) at chinaenv@erols.edu. This inventory also can be viewed on the Environmental Change and Security Web site: <http://ecsp.si.edu>.

PART I. UNITED STATES GOVERNMENT ACTIVITIES

ARMY CORPS OF ENGINEERS

<http://www.usace.army.mil/>

Engineer Research and Development Center

Partners: Institute of Water Resource and Hydropower Research at Tsinghua University (IWHR), University of California at Berkeley (UCB)

Focus: Dam Safety

Status/Schedule: Initiated 1998, Ongoing

Under the U.S.-China Protocol for Scientific and Technical Cooperation in Earthquake Studies, the Army Corps of Engineers (the Corps) and the UCB successfully conducted experimental studies on the Longyangxia Dam in China. In these studies, conducted October 7-27, 1998, explosive charges were used to simulate earthquake ground motions. The Corps team provided the necessary calculations to determine the amount and placement of explosives; it was also responsible for measuring the dynamic structural motions and the hydrodynamic loads on the face of the concrete dam. The report, entitled "Measurement and Prediction of Dam-Water-Foundation Interaction at Longyangxia Dam," was submitted to the National Science Foundation in November 1999. Together with the Corps, the IWHR at Tsinghua University is currently conducting basic research in the area of seismic response of concrete dams. This research includes detailed shake-table experiments of concrete dams that include monolith joints and lift joints. The data sets from these shake-table experiments can be effectively used to validate numerical procedures currently being developed by the Corps' Earthquake Engineering Research Program (EQEN). The use of these data sets could eliminate costly shake table experiments funded from the EQEN program.

BATTELLE-ADVANCED INTERNATIONAL STUDIES UNIT

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

<http://www.pnl.gov/aisu>

<http://www.battelle.org>

Beijing Energy Efficiency Center (BECon)

Partners: Energy Research Institute, LBNL, U.S. EPA, World Wildlife Fund, DoE

Focus: Energy, Capacity Building

Status/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 full-time staff of twelve professionals and many consultants. BECon is leading high-level projects for the World Bank and United Nations Development Programme and has contributed to many world-class reports on China's energy options.

Business Plan Training and Energy Efficiency Project Development

Partners: BECon, China Energy Conservation Investment Corporation, others to be determined

Focus: Energy Management, Capacity Building

Status/Schedule: Initiated 2000, Targeted Completion December 2001

Vendors and potential partners for efficiency projects often complain that they do not know who can approve a project and who can provide security for the financing. Energy managers at the provincial level and below are not always prepared to function in the newly emerging system to replace command and control regulation with market forces. They need training to learn the latest ideas in energy efficiency technology, financing, and management. This project will provide experience for both Chinese and foreign partners that will help them to make the Chinese market more transparent and influential. It will also allow Chinese entrepreneurs and energy planners to take full advantage of the market forces that can potentially reduce energy use. Initial business plan training will focus on the aluminum sector.

Economic and Environmental Modeling

Partners: BECon, Energy Research Institute, Chinese Academy of Social Sciences, Development Research Center of the State Council, Tsinghua University

Focus: Environmental Management

Status/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

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

minimize total development expenditures. The U.S. EPA is supporting a series of modeling workshops to share information on computable general equilibrium, optimization, and hybrid models, to analyze potential scenarios aimed at reducing mitigation costs, and to build a community of Chinese and international modelers.

Expanding Natural Gas Utilization in China

Partners: U.S.EPA, State Development Planning Commission (SDPC), University of Petroleum-Beijing

Focus: Energy Policy

Status/Schedule: Initiated 1999, Targeted Completion May 2001

Chinese policymakers are developing a renewed interest in natural gas to fuel economic growth without the detrimental environmental and health impacts of coal combustion. This study—one of the 10 agreements reached between the then-EPA Administrator Carol Browner and her Chinese colleagues in spring 1999—will explore supply, transmission and distribution, environmental impact, pricing, and regulatory issues with the goal of accelerating the development of China's natural gas system.

DEPARTMENT OF AGRICULTURE

<http://www.usda.gov>

China Wastewater

Partners: China Environmental Protection Foundation, Shandong Environmental Protection Bureau, EPA, National Risk Management Research Laboratory (NRMRL)

Focus: Water Management

Funding: U.S. Department of Agriculture (USDA) \$50,000

Status/Schedule: Initiated August 2000, Targeted Completion 2003

Based upon the successful completion of previous drinking water demonstration projects (1996-1999) in China, the U.S. and Chinese partners have proposed further cooperative research efforts. Specifically, the partners will conduct research on various aspects of watershed management focused on real-time data collection and systems management. The proposed research is comprised of two initiatives: 1) a pilot demonstration of a wastewater reuse package plant; and 2) the development and application of a surface water monitoring station. The projects are unique in that they involve the use of real-time data collection, transmission, and control of each of the systems. Under the "Joint Statement on Cooperation on Environment and Development between the United States and China," the two countries reaffirmed their commitment to sustainable management and protection of natural resources. Another goal of both the Chinese and U.S. partners is to continue in the spirit of the U.S. Technology for International Environmental Solutions (USTIES) Program that fostered cooperation between U.S. environmental equipment manufacturers and users within the China.

China Water Quality

Focus: Water Management

Funding: USDA and EPA: \$150,000, and additional Chinese governmental funding

Status/Schedule: Completed May 2000

A team of U.S. experts traveled to China to study industrial agriculture production (IAP) and its health and environmental impacts in China. Over a period of 12 days, team members visited facilities and interviewed managers, nongovernmental organizations (NGOs), political leaders, and scientists to ascertain the impact of IAP on health and environment in China, particularly with respect to water quality. Team members represented the following fields: industrial animal production, manure processing, water quality, environmental economics, and international health and epidemiology. This expert assessment could lead to the development of a water quality management center tailored to China, akin to the Livestock Waste Management Center in Taiwan.

USDA Video on Sustainable Agriculture

Partners: Global Village Beijing

Focus: Public Awareness

Funding: ICD

Status/Schedule: Initiated January 2000, Completed January 2001

The USDA worked with Sheri Liao of Global Village Beijing (GVB), a Chinese NGO based in Beijing, to produce a sustainable agriculture video series for China. The video series will be broadcast on Chinese Central Television 7, the national science and technology station during GVB's "Time for Environment" program that has an estimated audience of over 90 million. The program will also be broadcast on Chinese Central Television 2, the national economics and business channel during the

“Economics Half Hour” program that has an estimated audience of 150 million people. In addition to national broadcasts, the video will also appear on Chinese provincial television stations and will be used as a teaching supplement in Chinese agricultural universities. Key experts from USDA, universities, nongovernmental organizations, and farmers from across the United States provided interviews, demonstrations, and technical insights into the video project.

DEPARTMENT OF COMMERCE/INTERNATIONAL TRADE ADMINISTRATION

<http://www.ita.doc.gov/>
<http://www.ita.doc.gov/uscs/>
<http://infoserv2.ita.doc.gov/ete/eteinfo.nsf>

DEPARTMENT OF COMMERCE’S ROLE IN U.S.-CHINA BILATERAL ENVIRONMENTAL FORA

U.S. Joint Commission on Commerce and Trade (JCCT) (See CES 3)

U.S.-China Forum on Environment and Development (See CES 3)

Export Assistance Services

Environmental Technologies Exports (See CES 3)

Market Access and Compliance (See CES 3)

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. FCS officers and foreign national staff serve American companies in Hong Kong and five cities in the People’s Republic of China: Beijing, Shanghai, Guangzhou, Chengdu, and Shenyang. Mainland China services include market analyses, business counseling, market and policy information, and introductions to Chinese government officials and business contacts. In Hong Kong, the U.S. Asian Environmental Partnership (USAEP), which is affiliated with USAID, EPA, and the U.S. Department of Commerce, is active and a source for grant support, trade leads, exchange programs, information distribution, and trade events sponsorship. U.S. FCS Contacts:

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DEPARTMENT OF COMMERCE/NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

<http://www.noaa.gov>

Ongoing Projects (See CES 3): Environmental Data, Exports of Captive Marine Mammals, GLOBE, High Seas Drift Net (HSDN) SHIPRIDER Program, International Convention for the Conservation of Atlantic Tunas (ICCAT), PICES, Shellfish Aqua-culture, Technologies Specific to the Next Generation Radar (NEXRAD) System, TED-Technology Transfer, U.S.-China Cooperation to Discourage High Seas Driftnet Fishing, U.S.-China Fisheries Consultations, Yellow Sea Large Marine Ecosystem Project

Marine and Coastal Management Program

Partners: Chinese State Oceanic Administration, the Ministry of Agriculture, and the Chinese Academy of Sciences, and Various Provincial Governmental Agencies and Universities in China.

Focus: Marine Research and Cooperation

Status/Schedule: Initiated 1998, Ongoing

Established in 1998, the Marine and Coastal Management Program is the newest programmatic element of the Marine and Fishery Protocol. The program includes a suite of activities to develop and operate an integrated coastal management framework by: a) developing coastal use legislation; b) improving management and research of marine protected areas (corals, wetlands, and mangrove ecosystems); c) applying information technologies to facilitate effective resource decision-making, studies on marine pollution and mitigation; d) and undertaking comparative case studies concerning marine ecological management. Under this framework, the U.S. and China have established three partner reserves in Florida, Maryland, and Virginia with counterpart sites in Hainan, Guangxi, and Tianjin. For further information about this specific program, please contact Charles.Ehler@noaa.gov or Jonathan.Justi@noaa.gov. Please visit www.icm.noaa.gov/country/ICM-pro.html for additional information about developments in China's coastal and marine management.

The Protocol on Cooperation in the Field of Atmospheric Science and Technology

Partners: Chinese Meteorological Administration and numerous U.S. and Chinese Agencies and Research Institutes

Focus: Atmospheric Science Research

Status/Schedule: Initiated 1979, Ongoing

Under the 1979 U.S. Science and Technology Agreement, NOAA administers two area-specific protocols in marine and fishery science and atmospheric science. The Protocol on Cooperation in the Field of Atmospheric Science and Technology was renewed on May 7, 1999 without change for another five years. The Protocol has been in effect since May 8, 1979. Activities under the Protocol are divided into six major areas as follows: 1) Climate and Monsoon Studies; 2) Mesoscale Meteorology—such as typhoons, thunderstorms and tornadoes; 3) Satellite Meteorology; 4) Atmosphere Chemistry; 5) Meteorological Modernization; and, 6) Training and Participation.

U.S.-China Marine and Fishery Science and Technology Protocol

Partners: Chinese State Oceanic Administration, the Ministry of Agriculture, the Chinese Academy of Sciences, and various provincial governmental agencies and universities in China.

Focus: Marine Research and Cooperation

Status/Schedule: Initiated 1979, Ongoing

The NOAA Office of Oceanic and Atmospheric Research administers the Marine and Fishery Protocol, whose activities span the following five scientific areas: 1) Data and Information Exchange; 2) Marine Environmental Services; 3) Understanding the Role of the Oceans in Climate Change; 4) Living Marine Resources; and, 5) Marine and Coastal Management. See www.oarhq.noaa.gov/ia/Programs/China/china.html for more details on this protocol.

DEPARTMENT OF ENERGY

<http://www.doe.gov>

<http://www.fe.doe.gov/int/china.html>

<http://www.eia.doe.gov/emeu/cabs/china.html>

Protocols and Ongoing Projects (See CES 3): Asia-Pacific Economic Cooperation—Energy Working Group; Energy Efficiency and Renewable Energy Project and Clean Fossil Energy Experts Group, Protocol for Cooperation in the Fields of Energy Efficiency and Renewable Energy Technology Development and Utilization, Protocol on Fossil Energy Research and Development for Cooperation—Atmospheric Trace

Gases, Protocol on Fossil Energy Research and Development for Cooperation—Regional Climate Research, Protocol on Fossil Energy Research and Development, Cooperation on Clean Coal Technology (Two Initiatives), Joint Program on Market Issues Related to the Introduction of Clean Coal Technology in China, U.S.-China Energy and Environment Technology Center, U.S. Country Studies Program.

(Editor's Note: In this inventory see also: National Renewable Energy Laboratory, Lawrence Berkeley National Laboratory, and Battelle entries for more current projects with DoE involvement).

DEPARTMENT OF THE INTERIOR/BUREAU OF RECLAMATION

<http://www.usbr.gov>

<http://www.doi.gov>

Ongoing Projects (see CES 3): Memorandum of Understanding: Water

DEPARTMENT OF THE INTERIOR/FISH AND WILDLIFE SERVICE

<http://www.fws.gov>

<http://international.fws.gov>

U.S.-China Nature Conservation Protocol

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

Focus: Wildlife Conservation

Funding: Fish and Wildlife Service Division of International Conservation

Status: Initiated 1999, Completed 2000

The Fish and Wildlife Service administers activities with China under the bilateral Nature Conservation Protocol, signed in 1986. Exchanges carried out in 1999-2000 included joint radio-tagging of sturgeon in the Yangtze River, field studies of cranes in both the United States and China, and training of Chinese specialists in applications of the geographic information system to improve aquatic habitat quality. In the immediate future, work will focus on computer record-keeping of wildlife trade, wetlands assessment and conservation, endangered fish species, argali sheep study, and other conservation issues.

DEPARTMENT OF INTERIOR/MINERALS MANAGEMENT SERVICE

<http://www.mms.gov/intermar/china.htm>

Memorandum of Understanding: Water

Partner: Ministry of Land Resources (MLR)

Focus: Resource Management

Status/Schedule: Initiated 1997, Ongoing

On September 9, 1997, U.S. Minerals Management Service and the Chinese Ministry of Geology and Mineral Resources (MGMR) signed a Memorandum of Understanding (MOU) to share information concerning minerals management. Areas of cooperation include revenue management, conveyance of mineral rights and establishment of a leasing system; economic valuation and fair market value, development of an automated system for collecting and managing resources and revenues, and environmental evaluation. On April 8, 1998, the Ministry of Land Resources replaced the MGMR as the proper governing authority under the existing MOU through an Letter of Exchange between China and the Minerals Management Service.

U.S. ENVIRONMENT PROTECTION AGENCY

<http://www.epa.gov>

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

Air Quality Management Assessment Projects

Partners: State Environmental Protection Administration (SEPA)

Focus: Air Quality Management

Status/Schedule: Initiated November 1999, Ongoing

This project calls for a collaborative assessment of China's air quality management process in one major Chinese city and the potential for applying U.S. techniques (including technology transfer) to the management process. The U.S. EPA team undertook the first mission in November 1999 to discuss scope of project, information exchange activities, and capacity building opportunities. Briefings were held on both sides covering key components of the U.S. and Chinese air quality management systems. The first major activity under this project was a workshop to exchange scientific and implementation information on a broad scale and to obtain information from several environmental protection bureaus (EPBs) to aid in the selection of a pilot city. The workshop, the International Workshop on Air Quality Management, was held on April 26-28, 2000. Participants included EPA, SEPA, Chinese Research Academy of Environmental Sciences (CRAES), Chinese National Monitoring Center, Peking University, Tsinghua University, U.S. technical experts, international experts from Europe and the Netherlands, and EPB representatives from Beijing, Tianjin, Shanghai, Guangzhou, Chongqing, Xi'an, and Lanzhou. The workshop covered key air quality management elements such as the development of health-based standards, monitoring, source apportionment techniques, emission inventory development and use, modeling, and implementation program and control strategy development. Important information about the current status of Chinese efforts in these areas was obtained. The workshop proceedings have been compiled and are available on a CD-ROM. The workshop and subsequent meetings led the partners to select Shanghai as the pilot city. In January 2001, SEPA and EPA obtained a commitment from the Shanghai EPB to participate in the project as the pilot city. Between February 26-March 3, 2001, the EPA project lead met with the SEPA project lead and Shanghai EPB officials to discuss the project and schedule the assessment. Also present during the meetings were representatives from the Chinese Research Academy of Environmental Sciences, Shanghai Academy of Environmental Sciences, and the Shanghai Municipal Environmental Monitoring Center. The meetings were very informative and successful and the assessment trip to Shanghai is tentatively scheduled for mid-May.

Coal Mine Methane Market Development Plan

Partners: State Administration of Coal Industry

Focus: Emission Control

Status/Schedule: Initiated December 1999, Ongoing

This project will develop and implement a market development plan for methane, a potent greenhouse gas, which is released from active coal mines. The U.S. EPA and Chinese State Administration of Coal Industry co-hosted the first business advisory committee meeting and undertook pilot phase data gathering mission in December 1999. The data have been compiled and market and financial analyses are underway. In September 2000 the business advisory committee met to provide guidance on the full-scale phase, and technical and market data were gathered and analyzed for eight major coal-mine companies. The China Coalbed Methane Clearinghouse recently published an English language version of the first market opportunity report, for Jincheng Mining Area in southern Shanxi Province. EPA hosted a one-day workshop for experts from Jincheng in February 2001.

Cleaner Air and Cleaner Energy Technology Cooperation

Partners: State Development Planning Commission

Focus: Energy Management

Status/Schedule: Initiated 2000, Ongoing

This project will expand work under the Technology Cooperation Agreement Pilot Project by developing and implementing 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 - integrated gasification combined cycle power generation; 3) high-efficiency electric motors; and 4) grid-connected wind electric power. The project will also be expanded to include additional key technologies based on China's priorities. Expert teams in all four of the above technology areas have been formed. The first phase of wind and energy-efficient motors work is completed. An investment workshop on wind power is planned for late spring 2001, possibly in Guangzhou. Clean coal technology and industrial boiler efficiency work plans were developed during joint U.S.-China team meetings in January 2001. Work plans are now pending final approval by both sides.

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

Partners: SEPA

Focus: Air Quality Management, Emission Control

Status/Schedule: Initiated 2000, Targeted Completion December 2001

Sino-U.S. cooperation will continue to evaluate the air pollution and public health benefits of technologies and policies that reduce greenhouse gas emissions in Shanghai. This air quality research will be extended to Beijing and to one other city, with the ultimate goal being a preliminary national assessment by the end of 2001. This project was first discussed during technical

meetings in China July 7-14, 2000, and the work plan has been approved. Drawing from the joint research, preliminary analysis of the health effects of air pollution in Shanghai was published in an article by the Shanghai Medical Academy in December 2000. Energy and air-modeling experts from Shanghai will travel to the United States in April 2001 for technical assistance. The Beijing City work plan has also been completed and meetings were held with Beijing and Shanghai teams in January 2001. Research plans for the third city and the national approach currently are under discussion.

Cooperation on Development of Energy Efficient Buildings

Partners: SEPA

Focus: Energy Efficiency

Status/Schedule: Initiated April 1999, Currently Inactive

This project will assist the Chinese in collecting data and developing program designs for the preparation of a proposal for international funding, to promote the construction and operation of energy-efficient buildings. Chinese partners have provided preliminary data to the EPA project team. Initial contact has been made with United Nations Development Programme (UNDP)-Global Environment Facility (GEF) office to discuss the proposed project. EPA project team traveled to China in October to review and discuss a draft proposal for UNDP-GEF Project Development Funds (PDF). PDF funds would be used to support an expanded Chinese effort to develop a full application for a GEF grant. October 1999 discussions were very productive. A nearly complete PDF proposal has been prepared. The timing of further work on and submission of the PDF proposal to the UNDP-GEF office is under discussion. New factors that require consideration are: 1) coordination with World Bank analysis of Chinese buildings sector; and 2) discussions in China led by the Chinese Ministry of Finance regarding China's overall strategy with respect to GEF project.

Cooperative Study of Natural Gas Utilization in China

Partners: State Development Planning Commission

Focus: Energy, Emission Control

Status/Schedule: Initiated 2000, Targeted Completion 2002

A team of experts from government and key technical institutes in China and the United States will assess the potential, necessary policies and programs for expanding natural gas production and imports into China. The assessment will also investigate 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 may also 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 late 2000 by the joint research team led by the University of Petroleum in Beijing and Pacific Northwest National Laboratory (PNNL) in the United States. Extensive previous comments have been provided on the draft, and it is currently being significantly revised. The revised draft will be circulated widely to industry, government, and other stakeholders for further review and comment. Current plans are for a workshop in China to discuss the report and policy implications. The workshop will be held in late 2001 or early 2002. The final report will be produced within a few months after the workshop.

Decentralization of Local Environmental Protection - EPA Region III

Partners: The National Committee for U.S.-China Relations

Focus: Environmental Management, Capacity Building

Status/Schedule: Initiated 1999, Ongoing

This project aims to draw lessons from comparative experiences in the United States and China in solving local problems and building a civil society in terms of environmental protection. The National Committee for U.S.-China Relations has chosen to concentrate on activities that address water management. Two project sites were selected: 1) the Suihua Eco-Pilot Zone and the Jingbo Lake in Heilongjiang Province; 2) and the Songhua Lake and Xianghai Nature Reserve in Jilin Province. Three working group meetings were held during the course of the project beginning in May 1999. Participants included the Environmental Research Institute of Heilongjiang Province; Chinese Academy of Science; Institute of Geography in Jilin; the Heilongjiang Provincial Environmental Protection Bureau; Mudanjiang City Environmental Protection Bureau in Jilin Province; Institute of Environmental Sciences at Northeast Normal University in Jilin, Suihua Eco-Pilot Zone; The National Committee for U.S.-China Relations; U.S. National Science Foundation; EPA, International Crane Foundation (ICF); and the USDA.

Feasibility Study on the Use of Market Mechanisms to Achieve SO₂ Emissions Reduction in China

Partners: SEPA

Focus: Air Policy, Air Quality Management

Status/Schedule: Initiated June 1999, Ongoing

The U.S. and Chinese parties will cooperate on examining the possibilities for using market-based mechanisms for sulfur dioxide emissions control in three phases: 1) workshops to examine the U.S. SO₂ emissions trading program and the current SO₂ related problems and policies in China; 2) a pre-design study of the nature and effects of the SO₂ problem 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 SO₂ emissions trading program in China. The plans include a study tour for an inter-ministerial group of high level Chinese officials and practitioners from the local Environmental Protection Bureaus. On October 2-6, 2000 a one-day training and a two-day workshop were held in Washington, DC to provide education and information on SO₂ emissions trading to the inter-ministerial group. As a related capacity building effort, the U.S. EPA is working with the Asian Development Bank to deliver training on emissions trading in Shanxi Province.

Study of the Effect of Particulate Matter on Children's and Adults' Respiratory Health

Partners: State Environment Protection Administration

Focus: Air Quality Research

Status/Schedule: Initiated 1999, Pending

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 in adults and lung function growth in children in relation to outdoor and indoor air pollution exposure. The original study was conducted from 1993-1996 in the four large Chinese cities: Chongqing, Guangzhou, Lanzhou, and Wuhan, each of which exhibited wide inter-city and intra-city gradients of air pollution exposure. The follow-up study is to be conducted in the same four cities. Its main goal is to ascertain the relationship between changes in respiratory health status in children and adults, and changes in air pollution exposure in the original study locations from the early 1990s to the early 2000s. The follow-up interval will be about seven years. The initial planning visit and agreement on the study work plan occurred in August 1999. Subsequently, the project stalled due to the concerns by the EPA's Office of Research and Development (ORD). As of March 2001, the ORD was preparing financial-administrative instruments for implementation of this study.

Study of the Relation of Air Pollution to Asthma and Other Respiratory Health Problems

Partners: State Environment Protection Administration

Focus: Air Quality Research

Status/Schedule: Initiated September 1999, Currently Inactive

Under this project, the United States and China will cooperate to initiate detailed measurements of particulate matter in the cities of Wuhan and Beijing. Data would be analyzed by U.S. and Chinese experts and compared with existing data on asthma and other respiratory health problems in these two cities. Agreement was not reached with the Chinese side on the scope of the project during initial planning visit September 1999. However, both sides agreed in January 2000 to work together to come up with project plan for funding in fiscal year 2001.

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

Partners: State Environment Protection Administration

Focus: Energy Policy, Environmental Protection Policy

Status/Schedule: Initiated 2000, Ongoing

This initiative will significantly expand EPA's cooperative program with China on promoting cleaner production and pollution prevention. This project will focus on three main areas: 1) sharing experience on applying public policy and regulatory approaches that encourage pollution prevention (source reduction); 2) capacity building for technical and compliance assistance programs that promote pollution prevention and energy efficiency through government industry partnerships and "beyond compliance" incentive programs; and 3) information networking and exchange to improve access in China to U.S. technical materials, tools, and training resources, and to improve EPA's understanding of China's cleaner production activities and regulatory system. EPA and SEPA agreed to three focus areas with three additional elements. First, SEPA's Pollution Control Department (PCD) is taking the lead on the work plan for the Industry-Government Partnership Program, and key objectives will be the design of a program for "beyond compliance" performance. The EPA also has proposed that this program element be designed to reflect EPA's new thinking on promoting "beyond compliance" through its evolving "Performance Track" Program. Second, the EPA Office of International Activities will be taking the lead on developing a project component to build pollution prevention into SEPA regulatory programs. Three SEPA officials visited EPA headquarters and EPA's Region One as part of a study tour September 2000. A larger environmental pollution in prevention policy workshop in China may be held in late 2001 for SEPA officials, provincial EPBs and other stakeholders. Third, the SEPA Technology Policy and Standard Division in the Department of Science, Technology and Standard will be taking the lead on developing a project component dealing with improving pollution

prevention and energy efficiency information access and networking in China. Current plans call for EPA to sponsor a train-the-trainer exercise in the United States on use of the Internet for pollution information resources as well as to assist SEPA on design of a Web site in China to promote pollution prevention and energy efficiency information networking in China, followed by larger in-country training activities.

LAWRENCE BERKELEY NATIONAL LABORATORY

<http://eetd.lbl.gov/EA/partnership/China>

Appliance Standards, Labeling, and Market Transformation Programs

Partners: State Economic and Trade Commission, State Bureau of Quality and Technical Supervision, SEPA, National Council of Light Industry, China Certification Center for Energy Conservation Products, GEF, UNEP, Alliance to Save Energy, EPA, ICF Kaiser Consulting

Focus: Energy Management, Energy Policy

Status/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 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 a market transformation project, a sector survey, a consumer survey, and monitoring in 250 households; 4) training in electronic ballast standards; and 5) and preparation of a Green Lights GEF proposal. Current projects include: 1) training in fluorescent lighting standards; 2) training in the establishment of energy-efficiency criteria for China's energy-efficiency label (similar to U.S. Energy Star); and 3) and a cooperative study on the development of a mandatory informational energy label.

Benefit and Cost Analysis of Reducing Air Pollutant Emissions in Developing Countries

Focus: Air Quality Research

Status/Schedule: Initiated 2000, Targeted Completion 2001

A variety of methods have been developed to examine air pollution damages, such as local health and global effects. Nevertheless indoor air pollution from residential fuel use is usually ignored, which is actually the largest contributor to air pollution exposure in most developing countries. LBNL has developed and integrated a module to determine indoor particle concentrations. Case studies have been completed for Shanghai and Bombay. Potential opportunities for extending this work include applying the model to a case study of Beijing focusing on power plant improvements. The model could also be applied to a different case study of Beijing that focuses on the impact of switching from coal to natural gas in residential heating boilers. LBNL could also provide training to researchers in the use of the model in developing countries.

Building Energy Efficiency

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

Focus: Energy Efficiency Policy

Status/Schedule: Initiated 1999, Targeted Completion 2002

Building energy use 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. First, in the development of building energy standards and implementation procedures for the "Hot Summer, Cold Winter" Zone (also known as the Transition Zone). Second, in policy studies on institutional barriers to building energy efficiency (e.g., reform of the heating fee allocation system in Northern China). Lastly, this project also will focus on gathering energy-consumption data of residential and commercial buildings in China.

China Energy and Carbon Scenarios

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

Focus: Energy Policy, Environmental Policy

Status/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 Energy Databook

Partners: Energy Research Institute

Focus: Energy Research

Status/Schedule: Initiated 1999, Targeted Completion 2001

This project will produce the fifth edition of a collection of standard reference data on China's energy system, including sections on resources, production, consumption, investment, prices, imports and exports, energy-consuming activities, environment, international comparisons, and economic indicators. While the basic data are from publicly available official Chinese sources, the *Energy Databook* will compile a wide variety of information into one easily accessible English-language volume. This edition will be released on CD-ROM only. It will also include national and provincial energy balance data in a new database format that will allow users to develop their own queries to extract specialized data sets.

China's Refinery Options and Product Specifications

Partners: Trans-Energy Research, China Petrochemical Corporation, State Environmental Protection Administration

Focus: Energy Management

Status/Schedule: Initiated 2000, Targeted Completion 2001

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 to 2010 and the impact of greater fuel efficiency and the promotion of alternative fuels on China's production and import mix.

Industrial Energy Efficiency Policy

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

Focus: Energy Policy

Status/Schedule: Initiated 1999, Targeted Completion 2001

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 has always been a particular concern in energy-efficiency work in China since it consumes about two-thirds of China's commercial energy. This project aims to provide assistance in selecting and developing industrial-sector energy-efficiency programs. Policy options will contain a variety of policy tools, such as standards for energy-consuming processes, rules for calculating and reporting energy use and efficiency, reorganized energy management systems, investment mechanisms, tax and fiscal incentives, voluntary programs, technical assistance, and public outreach.

Residential Energy Consumption Survey/RECS

Partners: State Statistical Bureau (SSB)

Focus: Energy Research

Status/Schedule: Initiated 1999, Target Completion 2001

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 covered 250 households in five cities and will provide an important snapshot of current energy-consumption conditions and trends.

NATIONAL ACADEMY OF SCIENCES

<http://www.nas.edu>

Cooperation in the Energy Futures of China and the United States

Partners: Chinese Academy of Sciences, Chinese Academy of Engineering

Focus: Energy Research, Energy Policy

Funding: U.S. Department of Energy, U.S. EPA, Chinese participation is self-funded

Status/Schedule: Initiated 1999, Ongoing

Work is currently underway to institutionalize the relationship developed through this project. The U.S. and Chinese Academies of Sciences and Engineering are exploring the option to create a standing committee on energy cooperation among the four bodies to continue this work. The final report is available in hard copy and in full text online: <http://books.nap.edu/catalog/9736.html> (English), <http://www.nap.edu/catalog/9962.html> (Chinese).

The Future of Personal Motor Transport in China

Partners: National Research Council, Chinese Academy of Engineering

Focus: Transportation Policy

Funding: U.S. Department of Energy, Ford Motor Company, Daimler Chrysler

Status/Schedule: Initiated January 2001, Targeted Completion June 2002

This is a joint study by the U.S. National Research Council and the Chinese Academy of Engineering. The bi-national committee will analyze the state of motorization in China and explore the implications of the rapid introduction of family vehicles. They will consider infrastructure, environment, land use, congestion, and health, they will also evaluate the challenges and opportunities presented by new technologies for engines, emission controls, and fuels, and the role of urban planning. The report will be published in English and Chinese.

NATIONAL RENEWABLE ENERGY LABORATORY

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

Technology Cooperation Agreements Pilot Project (TCAPP)

Partners: SDPC, EPA

Focus: Energy Research, Energy Policy

Status/Schedule: Initiated 1997, Ongoing

The Technology Cooperation Agreements Pilot Project (TCAPP) is an initiative of the U.S. Government that is assisting developing countries in attracting clean energy investments that will meet their development needs and reduce greenhouse gas emissions. The private sector and international donor community are active participants in TCAPP, working in partnership with government lead teams in each country. In late 1997, TCAPP was initiated in China and the Chinese government developed a technology cooperation framework that detailed technology priorities that were both important for China's development as well as mitigation of greenhouse gas emissions. In April 1999, SDPC Minister Zeng Peiyan and the U.S. Environmental Protection Agency the now former Administrator Carol Browner signed a Statement of Intent for this three-year effort, with the new name Clean Air and Clean Energy Technology Cooperation project. National Renewable Energy Laboratory (NREL) leads implementation of TCAPP for the U.S. Government and has established a team of technical experts to assist the countries with their work. SDPC is the lead organization for this project in China.

Teams were formed in each sector with broad representation from the government, utility, industry and research communities. During an interagency meeting in January 2000, six actions were selected for implementation and are outlined below:

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 has already been instrumental in securing endorsement from the Ministry of Finance for this project proposal. Work might begin on this project in 2001-2002. A proposal for wind measurement equipment has been prepared for a UNDP renewable energy program.

2) Wind Turbine Testing for Certification

NREL provided International Energy Agency Recommended Practices and international standards information to the wind

team and met with members of the wind team to explain the testing and certification process in the U.S. The China Classification Society (CCS) is preparing the Chinese certification scheme for wind turbines while a Chinese testing organization is being identified. NREL and the Ministry of Science and Technology co-sponsored a wind turbine testing workshop on July 26-27, 2000 in Beijing to build local capacity in types of testing and certification, testing protocols, and testing equipment. CCS staff will attend a training program at NREL on design evaluation certification in mid-2001.

3) Wind Business Partnerships

a) Wind workshop—the wind team is investigating regional workshops to inform local utilities about the benefits of wind power and how wind power may be cost-effectively implemented as well as to assist local utilities in issuing competitive solicitations for wind power generation. The team is planning a regional workshop in 2001 to build local government and utility support and to introduce SDPC's new wind concession program.

b) Wind industry roundtable—Members of the wind team, Chinese wind companies, and U.S. wind industry will meet in summer 2001 in Washington, DC to discuss how to: 1) further develop business partnerships between international and Chinese companies; 2) help the Chinese to develop wind in a way that will attract more private investment; and 3) help the Chinese to develop wind more competitively to reduce their costs.

4) Motors Training

The goals of this action are to: 1) identify training needs and potential host institutions; 2) secure funding for a training center; 3) provide motors selection and motors systems design software and training; 4) and 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 which can be used to solicit additional donor support. The motors team co-sponsored and attended conferences in which they presented this proposal.

5) Motors Testing, Labeling, Standards, and Certification

The goals of this action are: 1) to provide information on test protocols, certification and standards; 2) assist in selection of appropriate protocols, certification and standards; find potential hosts for testing; 3) help secure funding for testing facility and equipment; 4) and initiate training in testing, standards, and certification. Information on test procedures, certification, and standards has been provided to the motors team.

6) Motors Financing and Business Partnerships

a) The motors team and International Institute for Energy Conservation (IIEC) co-sponsored an International Financing Seminar on China High Efficiency Motors on July 19-20, 2000 in Shanghai to develop pilot projects between end-users, suppliers, and financiers. This seminar involved 80 participants from international and local investment communities, motors manufacturers, and end-users. IIEC and the Henan First energy service company (ESCO) are following up by identifying projects that can test some of the financing mechanisms presented at the seminar.

b) During September 18-29, 2000, members of the motors team, SDPC, and Tsinghua University participated in a study tour of the U.S. This included visits to Rockwell, Robicon, Magnadrive, and Bechtel and a roundtable discussion hosted by the Business Council for Sustainable Energy (BCSE), which included several companies and financiers. The motors team was particularly interested in the Magnadrive technology and is arranging for a pilot demonstration and joint venture partners.

In the next two years, other priority technologies that will be included in the TCAPP project are advanced industrial boilers, high efficiency coal power generation, biomass gasification, and natural gas combined cycle power generation. More information on the TCAPP activities can be found at www.nrel.gov/tcapp.

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

Focus: Energy

Status/Schedule: Initiated 1995, Ongoing

This protocol 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. The Protocol was signed in February 1995 by DoE and the Chinese Ministry of Science and Technology. There are six annexes, four of which pertain to renewable energy. Of these, NREL implements annexes on rural energy development, wind energy development, and business development. Projects under each of the annexes are listed below. 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. Activities under the four Annexes implemented by NREL are outlined below.

Rural Energy Development Annex

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

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 the 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.

Gansu Solar Home System Project

Partners: Chinese Ministry of Agriculture (MoA)

Focus: Renewable Energy

Status/Schedule: Initiated 1998, Ongoing

Photovoltaic (PV) solar systems were installed in 320 homes and 10 schools by 1998 as phase I of this project. An additional 460 PV systems were installed by Gansu Solar Electric Light Fund and a revolving credit fund was set up by this project, and the MoA has now expanded its solar home system project to 10,000 households in six provinces. The Solar Electric Light Fund is now completing two PV school systems.

Great Wall PV Demonstration Site

Focus: Energy Education

Status/Schedule: Initiated 1999

A PV school and home demonstration project near Beijing was established in October 1999 to educate local people in solar energy and to demonstrate examples of the U.S.-China bilateral cooperation pilot projects that have been implemented in remote areas around the country. The demonstration system on the school consists of both crystalline and amorphous silicon modules—the 30W amorphous Unisolar system is DC and the 300W crystalline silicon Solarex system is AC. A 100W Solarex system sits on a nearby household.

Inner Mongolia Hybrid Household Project

Partners: The University of Delaware (UDE)

Focus: Renewable Energy

Status/Schedule: Initiated 1997, Ongoing

The University of Delaware and DoE/NREL completed case studies on household and village power systems, including technical performance and economic analyses of 41 households and three villages in 1997. In a pilot project between DoE/NREL and the Inner Mongolia New Energy Office, 341 household PV/wind systems have been installed. As a result of this activity, local officials in Dongwu County have completed a feasibility study and plan for 4,000 hybrid systems to be installed over the next five years. The provincial government has now decided to install 60,000 systems over the next five years with a small end-user subsidy.

Rural Biomass Collaboration

Partners: Chinese Ministry of Agriculture (MoA)

Focus: Renewable Energy

DoE/NREL and the MoA developed an assessment of biomass resources, a description of China's technological biomass capability, and an initial techno-economic assessment of potentially useful biomass and bio-energy systems. This assessment was published both as a bilingual set of three books and a CD-ROM. Joint work on life-cycle cost analysis of biomass gasification combined-cycle power generation has been published as in Chinese.

Rural Energy Survey and Analysis

Partners: Chinese Ministry of Agriculture (MoA), University of Delaware (UDE) and DoE/NREL

Focus: Renewable Energy

Status/Schedule: Initiated 1999, Targeted Completion 2001

The Chinese MoA, University of Delaware, and DoE/NREL collected rural energy survey and willingness-to-pay data for provinces in northwestern China. MoA staff completed a survey and analysis training at UDE in November-December 1999

and participated in the final analysis to optimize systems for various regions given local renewable energy resources and incomes. A report is being finalized.

Rural Renewable Energy Development Training Activities

Focus: Renewable Energy Management

- 1) Intensive biomass training sessions of two staff each were conducted in mid-1998 and mid-1999 at NREL on lifecycle assessment and Geographical Information Systems (GIS) analysis.
- 2) DoE/NREL also co-sponsored a two-week training with MoA for local technicians and government staff at the Asia-Pacific Solar Energy Training Center in Lanzhou during November 1999. The U.S. Solar Energy Industries Association and Southwest Windpower presented at this training course.
- 3) Brightness Program staff from the Beijing Jikedian Renewable Energy Development Center, northwestern provincial Planning Commissions, and the State Development Planning Commission attended a two-week training at NREL and in Southern California in May 2000 on rural electrification and renewable energy policy. The Brightness Program is China's largest rural electrification program and will include 450,000 home systems and 500 village systems in this first phase. Greenstar, Global Solar, Solar Development Foundation, Siemens Solar, Southwest Windpower, Institute for Sustainable Power, and Center for Resource Solutions presented at this training course. As a result of this work, two letters of intent for further cooperation were signed: between the Chinese and Greenstar as well as between the Chinese and Institute for Sustainable Power.

Wind Energy Development Annex

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.

Wind Energy Training

Focus: Energy Management

- 1) Each year, NREL trains two Chinese engineers in a two to three month training program on various topics, including: wind resource assessment, hybrid systems modeling, and wind utility interconnection modeling.
- 2) Staff from State Power Corporation of China trained in wind resource assessment and mapping techniques during 1996.
- 3) Staff from the Beijing Jikedian Renewable Energy Development Center and China Electric Power Research Institute trained in hybrid systems modeling and utility wind interconnection modeling during 1997.
- 4) Staff from Fulin Windpower Development corporation trained in hybrid systems modeling October 1999-January 2000.

Wind Resource Assessment and Mapping

Partners: U.S. Environmental Protection Agency

Focus: Renewable Energy

Status/Schedule: Initiated and Completed 1998

DoE/NREL and EPA completed a southeast China wind resource assessment and mapping in 1998 in Provinces Jiangxi, Fujian, and the eastern half of Guangdong. The most attractive wind resource is found along the coastal area and on the offshore islands, particularly along the coast of Fujian, where many excellent sites were identified by the mapping process.

Xiao Qing Dao Village Power Project

Partners: State Power Corporation of China

Focus: Renewable Energy

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. Performance and operational data will be collected. The project will be commissioned in early 2001.

Renewable Energy Business Development Annex

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. Workshops are outlined below.

- 1) Provincial Renewable Business Profiles. Two business development studies have been performed in partnership between the Center for Renewable Energy Development (CRED) and DoE/NREL. The first study conducted in late 1996, described factors that influence the deployment of renewable energy in six provinces. The second study, conducted in 1998, included four additional provinces and discussed changes that have been made under China's government restructuring. Results were published

as a report in December 1999: *Renewable Energy Markets In China: An Analysis of Renewable Energy Markets in Guangdong, Jiangxi, Jilin and Yunnan, with Updated Information from Beijing.*

2) Chinese PV Industry and Technology Assessments. An evaluation of local PV businesses and applications was published in September 1999 as a report: *PV Business Application and Evaluation.* This evaluation includes local interviews with a large number of PV cell and module manufacturers, distributors, and integrators.

A review of the status of PV technology and industry development in China, *Commercialization of Solar PV Systems in China*, was conducted by CRED and U.S. consultants. The English version is available on the China Web site and a bilingual version will be published in early 2001.

3) Business Development Workshops and Study Tours.

a) 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.

b) A follow-up U.S.-China Renewable Energy Business Workshop and study tour was conducted by DoE/NREL with 13 U.S. companies in China in November 1999. This workshop and study tour were fruitful in assisting U.S. companies with potential new customers, distributorships, and partnerships.

c) A three-day workshop on Wind Energy Business Development and Policy Analysis was held in April 1999 to train Chinese officials and companies in business development for grid-connected wind power.

4) Support for World Bank and United Nations Development Programme (UNDP)—DoE/NREL provided technical assistance, economic analysis, and wind resource assessments to the UNDP and to the World Bank in support of their initiatives for renewable energy development in China. This assistance helped the World Bank to develop a \$400 million renewable energy project and the UNDP to develop a \$26 million renewable energy program.

5) Energy Policy. In 1998, staff from CRED participated in a policy study of the United States with DoE/NREL and prepared a report on a comparison of U.S. and Chinese renewable energy policies. This report has led to the SDPC advocating several renewable energy policy initiatives and incentives to the State Council. These initiatives include the creation of a Renewables Portfolio Standard, reductions in value-added tax for renewables, and establishment of a special fund for renewables.

6) Outreach. In December 1999, NREL completed a Web site at 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

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

U.S.-China Renewable Energy Forum

Focus: Renewable Energy

Status/Schedule: April 19-20, 2000

DoE/NREL successfully held a Renewable Energy Forum April 19-20, 2000 in Washington, DC. Approximately 125 participants attended the Forum, including 50 Chinese delegates and representatives from 24 U.S. companies. A CD-ROM of the proceedings was released in June 2000. In addition to the Forum, the delegates attended the SOLTECH exhibition and Earth Day 2000 celebration on the National Mall, then attended a study tour of NREL and renewable energy facilities in California where they visited the Arkenol biomass plant, the Seawest wind farm, the Kramer Junction solar thermal plant, and the Siemens Solar PV manufacturing plant.

PEACE CORPS

<http://www.peacecorps.gov>

Environmental Education Project

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

Focus: Environment Education

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/Status: Initiated 2000, Ongoing

Responding to requests from its partners in the Chinese government, Peace Corps/China (in China, Peace Corps is known as the U.S.-China Friendship Volunteers), opened an environmental education program in 2000. Ten 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 them are also helping Environment Volunteers Association at Sichuan University.

UNITED STATES GEOLOGICAL SURVEY, BIOLOGICAL RESOURCES DIVISION

<http://www.usgs.gov>

<http://biology.usgs.gov>

<http://www.nbii.gov>

Biocontrol of Yellow Himalayan Raspberry (*Rubus ellipticus*)

Partners: The Institute of Plant Protection, Chinese Academy of Agricultural Science (CAAS)

Focus: Biodiversity

Status/Schedule: Initiated May 1997, Targeted Completion January 2003

The yellow Himalayan raspberry (*Rubus ellipticus*) is a highly invasive weed in Hawaii. Natural enemies (i.e., insects and diseases) will be sought in its native range in China. Initial testing at CAAS facilities was conducted to determine the suitability of candidate bio-control agents for possible introduction into Hawaii. Several insects and pathogens associated with *Rubus ellipticus* have been found. Some difficulty has been experienced in establishing one of the two difficult-to-cultivate, native Hawaiian species of *Rubus* at the CAAS to enable preliminary testing.

Biological Studies of Shortnose and Other Sturgeons

Focus: Biodiversity

Status/Schedule: Initiated October 1994, Targeted Completion September 2002

Spawning habitat requirements of shortnose sturgeon were located in two U.S. rivers, and these results are being tested on sturgeon species in two foreign rivers: the Yangtze and the Danube rivers. Successful telemetry fieldwork on spawning was done in the Connecticut River and the Yangtze River in China. Information on migration was gathered on radio-tagged shortnose sturgeon in the Connecticut River. Behavior and migration experiments were done in the lab on the early life stages of endangered pallid sturgeon and shovel-nose sturgeon of the Missouri Drainage. Behavior and migration of early life stages compares two United States species of two genera for their behavior and comparative experiments using young fish of two Chinese species are also being done in China.

Bird Banding Programs—Europe, Russia, Japan, China

Focus: Biodiversity

Status/Schedule: Ongoing

The U.S. Geological Survey (USGS) Bird Banding Laboratory collaborates with the national banding programs of several other countries. The collaboration includes the exchange and management of banding recovery records, the exchange of reports, technical information, and computer software, and the discussion of policy and procedural matters common to banding programs. The Bird Banding Laboratory Chief met with counterparts from China and several other countries at the 2000 EURING Conference held in Marshall, CA.

Comparative Studies of Polecats and Ferrets

Focus: Biodiversity

Status/Schedule: Initiated June 1990, Completed September 2000

The North American black-footed ferret (*Mustela nigripes*) and the Siberian polecat (*M. eversmanni*) are closely related mammals. The highly endangered black-footed ferret was extirpated from the wild by 1987, and biologists have long recognized that its Siberian relative served well as an investigative stand-in. To clarify relationships between the two ferret species and to assist in further research on captive ferrets three major investigations/studies were conducted. The first studies need were more detailed field investigations on the ecology of the Siberian polecat in native habitats. Another necessary study was careful genetic and morphological re-evaluation of the species. A final study was the establishment of a breeding population of pure Siberian ferrets from stock of known origin. Contact was made between U.S. and Chinese biologists in 1988 and 1989, and plans were made to pursue these objectives. Plans were formalized in Annexes 3-5 of the Sino-American Protocol on Cooperation and Exchanges

between the U.S. Department of Interior and the Chinese Ministry of Forestry. Additional arrangements were made directly between the USGS and the Northwest Plateau Institute of Biology, Academia Sinica.

Conservation of Ecological and Cultural Diversity in Sichuan Province

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

Focus: Ecosystems

Status/Schedule: Initiated March 1999, Ongoing

The project is to conserve ecological and cultural resources as national parks are being developed at two World Heritage Sites in Sichuan Province. Gap Analysis Program (GAP)/Geographic Information Systems (GIS) capabilities are being developed to inventory and conserve biological resources in the Wolong Nature Reserve Region. Other objectives include conserving ethnic cultures and biological diversity while developing new economic opportunities in western Sichuan. A proposal to fund this cooperative work has been submitted to the Global Environmental Facility by China's Ministry of Finance.

Earthquake Studies

Focus: Seismic Research

Status/Schedule: Initiated 1970, Ongoing

Since the 1970s, the USGS has conducted seismic research in cooperation with the China State Seismological Bureau (SSB), an independent agency reporting directly to the PRC President. In 1980, a Protocol for Cooperation in Earthquake Studies was signed between the U.S. National Science Foundation, the USGS, and the SSB. Much of the work with China involves the siting and linking of seismic stations into a network that is now part of the Global Seismic Hazards Network. The current Protocol also involves joint studies in earthquake prediction, seismic hazards evaluation, earthquake engineering, and other basic and applied seismic research.

Earth Sciences/Geology

Focus: Geologic and Mineral Resource Research

Status/Schedule: Initiated 1980, Ongoing

A Protocol for Cooperation in the Earth Sciences was signed in 1980 between the USGS and the China Geological Survey Bureau. There are four active annexes under the Earth Sciences Protocol: 1) Mineral Resources of Northeast Asia. Involves compilation of existing mineral resource information, geotectonic synthesis, and mineral terrace modeling for Northeast China and parts of Russia, Mongolia, Korea, and Japan. The Geological Research Institute, Changchun University of Science and Technology, is the lead PRC organization. 2) Carlin-Type Gold Deposits. Involves collaborative studies of the origin and distribution of sediment-hosted gold deposits in China that are similar to those found in Nevada. The Chinese Academy of Geological Sciences is the lead PRC organization. 3) Mineral Supply, Demand, and Production of China. The USGS Minerals Information Team works with the PRC Geological Survey Bureau on the compilation and exchange of information on mineral production, supply and demand, and the economic impacts of mining. 4) Human Health. The USGS, the U.S. EPA, and the National Institutes of Health are working with the PRC Institute of Geochemistry to study human health problems resulting from domestic use of high arsenic coal in Guizhou Province. The region experiences extremely high rates of arsenic poisoning, esophageal cancer, and fluorosis.

Economic Development and Conservation of Biological Diversity in Yunnan Province

Partners: Biological Resources Innovative Development Office in Yunnan Provincial Government

Focus: Ecosystems

Status/Schedule: Initiated November 1998, Ongoing

The government of Yunnan Province has initiated a program of improving economic conditions for their people by increasing development of biological resources. The Biological Resources Innovative Development Office has requested assistance from the USGS in developing this program. The USGS will assist in describing the biological resources, developing a GIS-based technology (GAP) to facilitate conservation planning, identify innovative economic opportunities, and 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, a short course for Chinese scientists and administrators on biodiversity, economics, and GIS, and grant writing. The level of involvement of USGS depends on the availability of outside funding.

Economic Development and Water Bird Habitat Conservation in the Tumen River Area

Focus: Biodiversity, Ecosystems

Status/Schedule: Initiated June 1998

This project implements some of the resolutions from the International Crane Workshop held in Harbin, Heilongjiang Province in June 1998. The USGS and China will apply for UNDP and UNEP funding to coordinate water bird habitat conservation with economic development in the Tumen River area. Standard and satellite telemetry training and economic analysis methods provided during the International Crane Workshop for Chinese, Russian, and Korean scientists will be applied in this project.

International Biodiversity Studies

Focus: Biodiversity

Status/Schedule: Initiated January 1995, Targeted Completion September 2004

In 1992, the International Snow Leopard Trust launched Project Snow Leopard (PSL), a unifying program of biodiversity assessment and training. Backed by multinational sponsors, including USGS, PSL promotes cooperation among countries with snow leopards through training and support for studies that advance the conservation of the cat and its habitat. To date, six training workshops on survey methods and conservation practices have been held, and the seventh is to be in China.

International Economics and Adaptive Management

Partners: Yunnan, Sichuan, and Heilongjiang Provincial governments

Focus: Environmental Management and Policy

Status/Schedule: Initiated October 1999

China is in the process of developing markets and changing public institutions. Cooperative USGS work with local governments in conserving biological and cultural diversity while enhancing economic opportunities will provide new insights about how markets and public institutions can better use science in U.S. natural resource decisions.

Information Exchange on Invasive Species

Partners: Institute of Zoology in Beijing

Focus: Biodiversity

Status/Schedule: Initiated November 1998, Ongoing

Information on invasive species of concern in China and the United States has been exchanged between the two parties and has resulted in pending publication of a preliminary summary of some significant biological invasions in China.

Landsat-7 International Ground Stations

Focus: Earth-observing satellite data transmission

Status/Schedule: Ongoing

The USGS has signed an Memorandum of Understanding (MOU) enabling the China Academy of Sciences to operate the China Remote Sensing Ground Station for receiving and distributing Landsat-7 satellite data. The USGS works with international ground station operators to ensure that they are able to download image files, maintain an archive of regional Landsat-7 data for public sale, and adopt standard data exchange formats. The international cooperator pays an annual ground station-licensing fee to the U.S. Government.

Surveying and Mapping Studies

Focus: Technology Transfer, Data Collection and Sharing

Status/Schedule: Initiated 1985, Ongoing

A Protocol for Cooperation in Surveying and Mapping Studies was signed in 1985 between the USGS and the State Bureau of Surveying and Mapping. Achievements include the release of previously unavailable maps and data for China, including topographic maps and data, environmental information, and earth gravity data. China has also become a significant consumer of U.S. mapping, imaging, and GIS technology. There are four active annexes under this Protocol: 1) Geographic Information Systems. SBSM and USGS jointly develop and exchange software for map digitizing, image display and analysis, spatial data processing, and GIS applications; 2) Remote Sensing. SBSM and USGS cooperate in image analysis and data extraction to produce thematic maps using satellite data, and conduct other cooperative research with emphasis on global change; 3) Management and Technology of Mapping Production. SBSM and USGS exchange information on developing partnerships for map and data production and distribution, implementing new technologies, mapping contracts and quality assurance, and public vs. private issues; 4) Application of Geodetic and Geophysical Data. Adopted in 1994, this annex involves cooperative activities for observation, development, and processing of geodetic and geophysical data and their application to surveying and mapping programs. The Geodesy annex is managed by the National Imagery and Mapping Agency (DoD), and includes the establishment of Global Positioning Satellite (GPS) stations in China.

Water Resources

Focus: Water Quality

Status/Schedule: Initiated 1981, Ongoing

A Protocol for Cooperation in the Study of Surface Water Hydrology was adopted in 1981 between USGS and the Ministry of Water Resources, Bureau of Hydrology. It has been used to promote cooperation in basic and applied studies of both surface and ground water resources. A current initiative is a joint study of ground water quality in the Haihe River Basin near the city of Tangshan. The approach used is that of the National Water Quality Assessment (NAWQA) Program of the USGS, where detailed studies of the hydrological system and ground water chemistry are performed to document both natural and human factors affecting water quality. This approach provides a unified study design that may allow the Chinese to better understand the status of their water resources on a national scale.

Wildlife Resources Education, Training, and Technical Assistance

Partners: The College of Wildlife Resources, Northeast Forestry University, Harbin

Focus: Environment Education

Status/Schedule: Initiated October 1992, Ongoing

The USGS has a long-term cooperative relationship with NFU, which has resulted in exchanges, training, short courses, and support for graduate and postdoctoral students in wildlife science. NFU is the only university in China that offers degrees in wildlife ecology and management, and their graduates have great influence on the conservation and management of China's wildlife resources. Current activities include cooperative publication of the proceedings of a workshop on Asian cranes, held in Harbin in June 1998.

U.S. TRADE AND DEVELOPMENT AGENCY

<http://www.tda.gov>

Feasibility Studies in China

Focus: Energy and Environment Trade Studies

The U.S. Trade and Development Agency (TDA) is an independent commercially oriented foreign assistance agency of the United States Government. TDA promotes economic development and trade in developing and middle-income countries by funding feasibility studies, consultancies, training programs, and other project planning services. Effective 13 January 2001, The TDA is once again able to operate in China, following the suspension of its programs as a result of the 1989 Tiananmen Square sanctions. TDA will provide funding for feasibility and pre-feasibility studies for private sector projects in China. Energy and environment will be two of the areas in which TDA plans to concentrate.

PART II. U.S. AND INTERNATIONAL ENVIRONMENTAL NONGOVERNMENTAL & ACADEMIC ACTIVITIES

ALLIANCE TO SAVE ENERGY

<http://www.ase.org>

Energy Efficiency Seminars

Partners: Changchun Foreign Investment Office, China Energy Conservation Association, China Metrology Association, Shanghai Energy Conservation Supervision Center, and Wuxi Demand Side Management Center of the China State Power Corporation

Focus: Energy Efficiency

Funding: U.S. Department of Energy (DoE)

Status/Schedule: Initiated 1997

These educational seminars allow representatives from U.S. energy efficiency companies to give presentations about the energy-saving benefits of their technologies and services. Nearly 1100 representatives from various Chinese enterprises, members of the provincial energy conservation associations, provincial utility managers, as well as national and local government officials have attended the seminars. The goals of this program are: 1) to raise the level of awareness and understanding of how energy efficiency is both cost-effective and environmentally friendly; 2) to provide Chinese enterprises access to energy-saving technologies and services and sources of financing; and 3) to develop the Chinese capacity to deliver energy-efficiency products and services by helping Chinese engineering and manufacturing firms partner with U.S. energy efficiency companies. The end result for

Chinese companies adopting greater energy efficiency technologies will be reduced cost, increased productivity, and lower pollution levels.

AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY

<http://www.aceee.org>

China Green Lights Program

Partners: State Economic and Trade Commission (SETC), Global Environmental Facility (GEF), Beijing Energy Efficiency Center

Focus: Energy Efficiency

Funding: \$26 million (\$8.14 million from the GEF, and remainder from the Chinese government and Chinese lighting equipment manufacturers)

Status/Schedule: Initiated June 2001, Targeted Completion June 2005

This project aims to address identified market barriers to widespread use of energy efficient lighting in China by broadening the China Green Lights start-up efforts. The overall objective of this program is to save energy and to protect the environment by reducing lighting energy use in China in 2010 by 10 percent relative to a constant efficiency scenario. The specific objectives include upgrading Chinese lighting products, increasing consumer awareness of, and comfort with, efficient lighting products, and the establishment of a vibrant, self-sustaining market in efficient lighting products and services.

China Motor Systems Energy Conservation Pilot Program

Partners: State Development and Planning Commission (SDPC), UN Industrial Development Organization, U.S. Department of Energy, Lawrence Berkeley National Laboratory (LBNL), and local Chinese partners

Focus: Energy Efficiency

Funding: \$2.2 million (\$1.55 million from the Energy Foundation, \$450,000 of in-kind technical support from DoE and \$200,000 of in-kind support from the Chinese government)

Status/Schedule: Initiated March 2001

This project will establish motor system optimization services in two Chinese provinces—Jiangsu and Shanghai. This work is intended as a pilot program for a subsequent nationwide effort. Motor systems consume more than half the electricity used in China and the single largest opportunity to reduce motor system energy use is to employ good engineering in order to optimize each system for its application. During the project, five to eight optimization experts will be trained, at least ten workshops will be held for enterprises, and four completed optimization projects will be implemented and documented in each province.

Sino-U.S. Energy Efficiency Teams

Partners: SDPC, DoE

Focus: Energy Efficiency

Funding: Largely in-kind efforts, a few special projects have small budgets

Status/Schedule: Initiated 1995

A series of teams have been set up to facilitate cooperation on energy-efficiency efforts in China including teams dealing with lighting, motors, policy, co-generation, and finance. For example, the lighting team has worked closely to develop the China Green Lights GEF project. The motor team has worked to develop the China Motor Systems Energy Conservation Project, which includes a pilot project in two provinces; national expansion from this pilot project is the ultimate goal.

ATLANTIC COUNCIL

<http://www.acus.org>

Clean Air for China and India

Partners: Committee for Energy Policy Promotion (Japan), and multiple Chinese and Indian partners in government research institutes, NGOs, and the private sector

Focus: Air Policy, Energy Policy

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

Status/Schedule: Initiated July 2000, Targeted Completion July 2002

The objective of this two-year project is to develop consensus recommendations on a quadripartite basis (China, India, Japan, and 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 policymakers in the public and private sectors in the four countries noted. During year one, which is funded, the project activities will focus on developing Chinese and Indian views on energy and air pollution, as well as possible policies and actions. In year two, a policy paper 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 in the four countries.

CARNEGIE COUNCIL ON ETHICS AND INTERNATIONAL AFFAIRS

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

Understanding Values: A Comparative Study of Values in Environmental Policymaking in China, India, Japan, and the United States

Partners: The Research Center for Contemporary China, Peking University, the Beijing Environment and Development Institute, Center for the Study of Developing Societies (India), Lake Biwa Museum (Japan), and the Bureau of Applied Research in Anthropology at the University of Arizona.

Focus: Environmental Policy

Funding: U.S.-Japan Foundation, The Henry Luce Foundation, Inc., National Science Foundation

Status/Schedule: Initiated 1998, Targeted Completion 2002

The Carnegie Council has initiated a multi-site, multi-year collaborative research project to explain and compare cultural, social, and political values and their role in environmental policymaking in China, India, Japan, and the United States. The research focuses on the values that are decisive for policy practitioners and the public in their approach to environmental protection and development in these four societies, namely criteria for judgement, preference, and choice. The project's goal is to increase understanding of the relationship between top-down and bottom-up approaches to the environment by examining the conceptualization, articulation, and prioritization of values as they relate to the environment and by evaluating the role these values play in environmental policymaking.

CENTER FOR ENERGY AND ENVIRONMENTAL POLICY, UNIVERSITY OF DELAWARE

<http://www.udel.edu/ceep>

Renewable Energy for Rural Electrification in Western China

Partners: Chinese Ministry of Agriculture, the Institute of Policy and Management (Chinese Academy of Sciences), DoE, and U.S. National Renewable Energy Laboratory (NREL)

Focus: Renewable Energy

Funding: DoE and NREL

Status/Schedule: Initiated 1993, Targeted Completion 2001

The main purpose of the project is to promote the use of wind, solar, and other renewable energy applications in China, in order to balance the goal of rural economic development with environmental sustainability. The initial phase was a comprehensive feasibility study of off-grid renewable energy applications in China's Inner Mongolia Autonomous Region. A spreadsheet-based computer model³Rural Renewable Energy Analysis and Design Tool (RREAD)⁴was developed by researchers at the Center for Energy and Environmental Policy to evaluate the energy and economic performance of off-grid renewable energy technologies in comparison with conventional gasoline or diesel generators. The results of the feasibility study indicated that off-grid renewable energy options provide a cost-effective alternative for meeting the rising electricity demands of rural communities in Inner Mongolia. The findings of this study led the DoE to launch a \$2 million demonstration project that was cost-shared with the Chinese government. The second phase of the project is a comprehensive socioeconomic assessment of renewable energy utilization for rural electrification in three of China's western provinces: Inner Mongolia, Qinghai, and Xinjiang. The goals of this comprehensive assessment are: 1) to evaluate renewable energy resource availability for small-scale use in western China; 2) to assess the economic feasibility of using these resources; 3) to characterize rural energy users' needs and preferences; 4) to understand the role of social, economic, and technical factors in influencing the attitudes of rural households toward renewable energy and conventional energy technologies, and in predicting their utilization of small-scale wind technologies; 5) to predict the market potential for renewable energy systems in the area, and 6) to identify policy gaps and develop policy options for the development of western China's renewable energy market.

CENTER FOR RESOURCE SOLUTIONS

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

Climate Change Meetings

Partners: International Project for Sustainable Energy Paths, LBNL

Focus: Environmental Education

Status/Schedule: Initiated 1999, Ongoing

The purpose of the project is to bring Chinese policy leaders to the United States to meet informally with U.S. climate change experts and to receive training in carbon measurement. In 1999, the Center for Resource Solution (CRS) scheduled training and meetings with leading U.S. experts and Madam Sun and Ms. Xiang from China's SDPC, Committee for Climate Change. Other Chinese policy leaders from the Ministry of Foreign Affairs are expected to participate in the program in 2000 and 2001.

International Expert Assistance

Partners: David and Lucile Packard Foundation, Energy Foundation

Focus: Energy Policy

Status/Schedule: Initiated 1999, Ongoing

CRS is providing policy assistance in the areas of electricity restructuring, regulation, renewable energy, and energy efficiency policy in China. CRS has the lead on renewable energy policy and program design, and CRS staff traveled to Beijing twice for meetings with Chinese officials working in these areas. In 2000, CRS staff began working directly with the Chinese State Planning Commission on the development of an Action Plan for Renewables as a part of the 10th Five Year Plan and also started working on other initiatives identified by their Chinese colleagues.

CONSERVATION INTERNATIONAL

<http://www.conservation.org>

Hengduan Mountains Conservation Project

Partners: Sichuan Provincial Planning Committee, Chengdu Institute of Biology (CIB)

Focus: Biodiversity, Conservation Management

Funding: Critical Ecosystem Partnership Fund (CEPF) and co-funding by CIB

Status/Schedule: Initiated October 2000, Targeted Completion August 2002

The project goals are to strengthen management of selected nature reserves and to promote conservation friendly land use within biodiversity corridors connecting these reserves. The first activity is a conservation priority-setting exercise to identify the most vulnerable areas and species. This exercise will generate biodiversity databases, land cover maps, and white papers on key conservation policy issues.

EAST-WEST CENTER

<http://www.ewc.hawaii.edu>

Ongoing Projects (See CES 3): The East-West Center Research Program

ECOLOGIA (ECOlogists Linked for Organizing Grassroots Initiatives and Action)

<http://www.ecologia.org> and www.virtualfoundation.org

Chinese Environmental NGO Capacity Building Project

Partners: Green Earth Volunteers

Focus: NGO Capacity Building

Funding: Ford Foundation Grant

Status/Schedule: Initiated February 2000, Targeted Completion January 2002

The project is designed to strengthen the partnership between ECOLOGIA and Green Earth Volunteers—a Beijing-based NGO. The project aims to assist Green Earth Volunteers in capacity building and to provide a model of international cooperation. The partnership allows Green Earth Volunteers to continue developing its volunteer-based programs while working with ECOLOGIA to explore the creation of professionally-focused NGO programs. Since 1989, ECOLOGIA has assisted start-up environmental NGOs in countries in transition in Central Europe and the former Soviet Union by developing organizational capacity, training programs, libraries and online information systems, water monitoring networks, and environmental management systems for small enterprises. ECOLOGIA is in the process of exploring which of these programs may be useful in China.

Virtual Foundation and Small Grants Program

Focus: NGO Capacity Building

Funding: Ford Foundation, Trace Foundation, and individual private donors

Status/Schedule: Initiated 1997, Ongoing

ECOLOGIA provides direct small grants (under \$1,500) 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 is used to match grant applicants with foreign organizations and individuals interested in supporting community projects in China. Examples of funded projects and information on applying to ECOLOGIA and the Virtual Foundation may be found on ECOLOGIA's Web sites listed above.

ENVIRONMENTAL DEFENSE

<http://www.ed.org>

Total Emissions Control and Emission Trading Pilot Study in China

Partners: Beijing Environment and Development Institute (BEDI), State Environmental Protection Administration (SEPA), Benxi and Nantong Municipal Environmental Protection Bureaus

Focus: Emission Control

Status/Schedule: Initiated 1997, Targeted Completion 2001

Environmental Defense is currently undertaking a project to develop strategies for implementing China's total emissions control (TEC) policy. It was the goal of SEPA to control the emissions of some pollutants by 2000 at their 1995 levels, and to achieve further reductions within the 2000-2005 timeframe. Environmental Defense has been working closely with the Planning and Finance Department of SEPA to examine implementation policy alternatives to help SEPA achieve this goal, with emphasis on the application of market-based solutions. Phase I of the project is 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 newly published book titled *Total Emission Control and Tradable Emission Rights* (Ma Zhong and Du Dande (Daniel Dudek). 1999. *Zongliang Kongzhi yu Paiwuquan Jiaoyi*. Beijing: Zhongguo Huanjing Kexue Chubanshe.), which is the first such book in China. Phase II is focused on the development of solutions to the implementation problems identified in Phase I. Two pilot cities have been selected for 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 is partnering with the Benxi Environmental Protection Bureau to develop local cap and trade legislation to control sulfur dioxide emissions. In Nantong, a genuine emission trade between a power plant and a light manufacturing facility is being developed by Environmental Defense and its local partner, the Nantong Environmental Protection Bureau. In the next phase, Environmental Defense is planning to extend its experience to one of the "super cities" or an industrial sector to test the robustness of Environmental Defense's previous work and to start testing the feasibility of implementation at the national level. New partnerships with both government agencies and industries, both domestic and international, are expected to be developed to facilitate more expanded efforts in the future. (*Editor's Note: This project also is inventoried under BEDI in this publication*)

EXPORT COUNCIL FOR ENERGY EFFICIENCY

<http://www.ecee.org>

International Energy Efficiency Technology Assistance Program

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

Focus: Energy Efficiency Education

Funding: U.S. Department of Energy

Status/Schedule: Initiated 1994, Targeted Completion 2003

Export Council for Energy Efficiency (ECEE), through five member organizations, promotes the global use of energy-efficiency products and services by increasing the awareness of their tremendous economic and environmental benefits. The China

program, which currently has funding through 2003, works to reduce barriers impeding widespread implementation of energy efficiency activities and to increase dissemination of U.S. energy efficiency technologies and services. Since 1997, the ASE, an ECEE member, has conducted eleven energy efficiency mission seminars in China. The seminars have educated nearly 450 representatives from the top 500 state-owned enterprises in China, members of the provincial energy conservation associations and local government officials about the benefits of energy-saving technologies and services. In addition, the IIEC, another ECEE member, has established a market transformation program promoting high-efficiency motor standards and industrial use in China. ECEE has also supported several peer exchanges between state/provincial energy officials in the United States and China, through members of NASEO. The peer exchanges have assisted provinces to adopt energy-efficient building practices and sustainable development techniques. Additionally, energy performance contracting seminars are planned for the future, as well as facilitating the formation of relevant efficiency associations.

INSTITUTE FOR TRANSPORTATION AND DEVELOPMENT POLICY

<http://www.itdp.org>

South China Sustainable Transport Project

Partners: Guangzhou Transport Planning Research Institute, Guangdong Consumers Association

Focus: Environmental Policy, Urban Development

Funding: Rockefeller Brothers Fund, The New Land Foundation

Status/Schedule: Initiated 2000

The project will bring leading pedestrian planning experts from the United States and Hong Kong to give to Guangzhou Province a workshop on state-of-the-art pedestrian planning. The experts will review six pilot pedestrian improvement projects planned in Guangzhou. The workshops will also be a way of initiating a dialogue between the transport planners and the Guangdong Consumers Association to involve transportation users more directly in the planning process.

INSTITUTE OF INTERNATIONAL EDUCATION

<http://www.iie.org>

Fellowship Program

Partners: The Henry Luce Foundation

Focus: NGO Capacity Building

Funding: The Henry Luce Foundation

Status/Schedule: Annual four-week program

The fellowship program brings eight women per year from Chinese NGOs to the United States for a study tour and professional affiliation. In 2000 the program focused on the environmental field. The eight participants had an opportunity to attend workshops, observe U.S. NGOs, and take part in discussions regarding the role of NGOs in developing environmental awareness and practices within their communities. Topics included networking, the use of volunteers, management/leadership, and fundraising techniques. The participants in 2000 included women from the People's Republic of China, Hong Kong, and Taiwan.

INTERNATIONAL CRANE FOUNDATION

<http://www.savingcranes.org>

Conservation of Globally Significant Wetlands Used by Siberian Cranes

Partners: State Forestry Administration of China, Forest Bureaus of Heilongjiang, Jilin, and Jiangxi Provinces, Convention on Conservation of Migratory Species of Animals

Focus: Biodiversity, Conservation Management

Funding: Global Environment Facility

Status/Schedule: Initiated March 2000, Targeted Completion 2006

With support from the Global Environmental Facility, the International Crane Foundation (ICF) is developing plans for a five-year program to address major threats to wetlands and migration corridors required by the Siberian Crane and other migratory waterbirds across eastern China, as well as in three other Asian countries. Proposed sites include Songnen Plain in northeast China and the Greater Poyang Lake Basin along the middle of the Yangtze River.

Environmental Summer Camp Exchange Between Russia and China

Partners: Muraviovka Park (Russia), Changlindao Nature Reserve (China)

Focus: Environmental Education

Funding: Cracid Conservation and Breeding Center

Status/Schedule: Initiated 2000, Targeted Completion 2003

Muraviovka Park, located in Amur Region, is the first privately protected area in Russia since 1917. Since their initiation in 1994, the summer camps have been one of the park's main activities for serving and involving local communities. Changlindao Nature Reserve is on the other side of Amur River in China. The summer camp exchange started in 2000, when 14 Chinese teachers, students, and reserve staff participated in the summer camp held in Muraviovka. In 2001, Russia will send teachers and students to Changlindao Nature Reserve. This exchange aims to enhance information exchange between China and Russia, strengthen environmental education, and improve awareness of conservation needs for the Amur Basin as a whole.

Integrating Conservation with Rural Development at Cao Hai Nature Reserve

Partners: Cao Hai Nature Reserve, Guizhou EPA, and Trickle Up Program

Focus: Biodiversity, Conservation Management

Funding: Trickle Up Program, Liz Claiborne and Art Ortenberg Foundation, Ford Foundation, Guizhou Provincial Government, John D. and Catherine T. MacArthur Foundation, U.S. Department of State, Keidanren Nature Conservation Fund; donations by International Crane Foundation members

Status/Schedule: Initiated 1993, Targeted Completion 2003

Since 1993, ICF has been working at the Cao Hai Nature Reserve, a wetland area supporting 400 wintering black-neck cranes and numerous other waterbirds. As a response to severe human pressure on the wetland and its watershed, this project involves local farmers in creating economic alternatives that protect the resource base on which both human and avian communities depend. The project relies on two micro-finance mechanisms (small grants and revolving loan funds) and emphasizes farmer participation in decision-making and conservation.

Protection of Black-Necked Cranes in Agricultural Areas of South-Central Tibet

Partners: Tibet Plateau Institute of Biology, Agro-Environmental Protection Institute, Tibet Agricultural and Forestry Bureaus

Focus: Biodiversity, Conservation Management

Funding: Brehm Fund for International Bird Conservation, U.S. Department of State, ICF member donations

Status/Schedule: Initiated 1990, Ongoing

Since 1990, ICF has been studying a wintering population of about 3,900 black-necked cranes (two-thirds of the world's known population). As this population is dependent on waste grain of fallow croplands in winter, ICF has worked with agricultural and wildlife authorities to develop strategies that will maintain cropland and roost-site conditions needed by the cranes. ICF is currently considering mechanisms for initiating pilot activities at one or more additional locations.

Publication of China Crane News

Partners: Crane and Waterbird Specialist Group of the China Ornithological Society, Cracid Breeding and Conservation Center (Belgium)

Focus: Biodiversity, Environmental Education

Funding: Cracid Conservation and Breeding Center

Status/Schedule: Ongoing

The Crane and Waterbird Specialist Group publishes its newsletter the *China Crane News* twice each year. This newsletter reports research and conservation related to cranes, waterbirds, and their habitats in China and is distributed among scientists, reserve managers, and officials interested in cranes, in order to enhance communication and cooperation. The newsletter includes full texts in both Chinese and English to promote international collaboration.

Studies of Waterbirds, Water Levels, and Aquatic Food Plants as a Basis for Conservation of Threatened Wetlands at Poyang Lake, China

Partners: Poyang Lake Nature Reserve, Jiangxi Nature Reserve Management Office

Focus: Biodiversity, Conservation Management

Funding: Cracid Conservation and Breeding Center, Brehm Fund for International Bird Conservation, ICF

member donations

Status/Schedule: Initiated 1999, Targeted Completion 2004

The ICF is working with managers and technical staff at Poyang Lake Natural Reserve to study key aspects of crane and wetland ecology. Research will guide development of programs to mitigate impacts of wetland destruction and to expand protected areas in response to expected fluctuations in hydrology and aquatic vegetation.

INTERNATIONAL FUND FOR CHINA'S ENVIRONMENT

<http://www.ifce.org>

Environmental Technological Exchange Journeys to Western China

Partners: China's National Political Consultative Committee, Chinese Ministry of Education

Focus: Environmental Education

Funding: Chinese Ministry of Education and local host governments in western China

Status/Schedule: Planned for 2001

The International Fund for China's Environment (IFCE) will organize two environmental technology exchange trips for those in the fields of science and industry to visit western China in 2001. One delegation is to visit Guizhou and Sichuan Provinces. Another will visit Qinghai Province and Inner Mongolia. The purpose of the trips is to introduce the latest environmental technologies to these underdeveloped regions, to explore potential technological cooperation projects, and to provide policy recommendation in environmental and ecological management.

Establishment of the Children Environmental Art Educational Base in Xian

Partners: Little Swan Art Troupe of Xian, Shanxi Women's Union, New York Life, Triway Enterprises

Focus: Environmental Education

Funding: Xian Municipal Government and Triway International

Status/Schedule: Initiated 2000

The goal of the Children Environmental Art Educational Base (CEAEB) is to promote the concepts of the sustainable development and nature conservation in Xian to children and the public through art education and public performance. To achieve its goal, the CEAEB plans to organize activities such as special performances for environmental festivals (such as "Green Dancing" show on China Central Television (CCTV) on the World Environmental Day), field trips to paint endangered species and nature sites, publication of art works on CD ROM, an environment educational Web site, and field survey trips to study biodiversity and nature conservation. Another major ongoing project of the CEAEB is the "Sino-US Children Environmental Painting Competition."

Second NGO Forum on U.S.-China Environmental Cooperation

Partners: Shannxi Women's Union/Mother Environmental Volunteers Association, U.S. Environmental Protection Agency (EPA)

Focus: NGO Capacity Building

Funding: Pending

Status/Schedule: Planned for fall of 2001

IFCE and the Shannxi Women's Union/Mother Environmental Volunteers Association are planning to co-organize the second U.S.-China NGO Forum in Xian, China in September 2001. The Mother Environmental Volunteers Association of the Shannxi Women's Union is one of the most active environmental NGOs in China and was the winner of the Earth Award in 1999, one of the most prestigious environmental awards in China. The purpose of the NGO forum will be to promote the understanding of NGOs, facilitate cooperation and partnerships within and beyond the NGO community, and enhance the capacity of environmental NGOs in China. Approximately 150 participants from the United States and China are expected to take part in this event.

Training Program: Development in Energy Conservation and Renewable Energy in China

Partners: Zhejiang Energy Research Institute

Focus: Energy Education, Energy Policy

Funding: Energy Foundation

Status/Schedule: Initiated March 2001

IFCE and Zhejiang Energy Research Institute will jointly develop a training program for energy administrators in China. The

goals of the project are to enhance leadership and managerial capacity of Chinese energy administrators and managers to develop energy policies for sustainable development, as well as to promote policy and technological exchanges between the United States and China. Specific objectives are to: 1) increase the awareness of officials, power suppliers, industries, and technology extension professionals in China regarding cost-effective energy conservation techniques, available renewable energy technologies, and other technical options; 2) develop further analytical insight into the policy barriers, market demands and strategies for deployment of energy-efficiency and renewable-energy technologies; 3) enhance leadership capacities for Chinese decision-makers to develop favorable energy policies for sustainable development; 4) promote collaborative activities between Chinese and U.S. governmental agencies, industries, and research institutes; and 5) develop a network of energy professionals and organizations in China with capacity to cooperate with professionals and organizations in the United States through Internet information resources.

INTERNATIONAL INSTITUTE FOR ENERGY CONSERVATION

<http://www.cerf.org/iiec>

CFC/Copper Energy Efficiency Program in China for Energy-Efficient Industrial Motors and Motor Systems

Partners: Chinese State Development and Plan Committee, State Economy and Trade Committee, China State Bureau of Quality and Technology Supervision, Small and Medium Electrical Motor Association, Electric Power Research Institute, German GTZ, TCAPP Program (with NREL and EPA), Motor Challenge Program (with LBNL and DoE)

Focus: Energy Efficiency

The International Institute for Energy Conservation (IIEC), along with a large team of U.S., Chinese, and German government partners, is engaged in a three-year project to facilitate the development of a market for energy-efficient industrial motors and motor systems in China. The four strategies to transform the market are branding and labeling, standards and policy, financing mechanism, and demonstration projects. Major components of the project include:

- 1) Technology and market assessment on China motor, transformer, and ballast market, 1998-1999
- 2) Market assessment dissemination and strategy seminar, Shanghai, June 1999
- 3) Chinese government education in the second International Conference on Energy Efficiency Motor Drive System, held in London September 1999
- 4) The International Forum on China Motor Efficiency Standard and Testing Methodology, Beijing, November 1999
- 5) Standard and industry expertise study tour to United States, March 2000
- 6) International Financing Seminar on China Energy Efficiency Motor and System, Shanghai, July 2000

For more information call Asia and Africa Director Denise Knight at 202-326-5170 or by email at dknight@iiec.cerf.org, or contact project manager Peter Liu at 8610-6804-2450 or email pliu@iiec.cerf.org.

Compressed Natural Gas Transportation Project

Focus: Energy Policy

Status/Schedule: Completed 2001

IIEC has recently completed developing a proposal for a transportation project that will convert fleet vehicles in Beijing from gasoline to compressed natural gas.

Energy Efficient Transformers

Partners: Multiple Chinese Agencies and Enterprises

Focus: Energy Efficiency

In this project, the IIEC worked with several Chinese agencies and enterprises to promote the use of energy-efficient transformers in China. The focus of this project was to develop policies that encourage Chinese electric utilities to purchase transformers based on total lifecycle cost analysis.

Xiamen Sustainable Transport Project

Partners: City Government of Xiamen, U.S. Environmental Protection Agency

Focus: Environmental Policy

Status/Schedule: Completed

IIEC has completed work with the City of Xiamen to undertake an integrated transport services planning activity. The purpose of the project was to analyze the most cost-effective and least polluting way to improve Xiamen's transportation system.

INTERNATIONAL RIVERS NETWORK

<http://www.irn.org>

<http://www.hk-sanxia.org>

Campaign for Living Rivers in China

Focus: Environmental Education

Funding: Foundation for Deep Ecology, Richard and Rhoda Goldman Fund

Status/Schedule: Initiated 1997

By using the Three Gorges Project as a case study, International Rivers Network is working to increase public awareness regarding the environmental, social, cultural, and economic impacts of unsustainable river management practices and to advance alternatives to large hydro projects in China. Accomplishments of this campaign have included: a National Security Council recommendation that the U.S. government should avoid participation in, or association with the project; and a May 1996 U.S. Export-Import Bank announcement that they would not guarantee loans to U.S. companies seeking contracts for the Three Gorges Project. This announcement and current efforts aim to impede private-sector capital flows to the project by mobilizing public pressure on existing and potential investors to document the immediate technical problems and social and economic impacts of the dam. To register for a listserv on Three Gorges, water, and energy issues in China, email irn@irn.org.

INTERNATIONAL SNOW LEOPARD TRUST

<http://www.snowleopard.org>

Conservation of the Snow Leopard and Its Mountain Habitat

Partners: Mountain Institute at Tibet, Office of Working Commission and Management Bureau of the Qomolangma National Nature Preserve

Focus: Conservation Policy, Conservation Management

Status/Schedule: Initiated 1992, Ongoing

The International Snow Leopard Trust (ISLT) is dedicated to the conservation of the endangered snow leopard and its mountain ecosystem through a balanced approach that considers the needs of the local people and the environment. ISLT has implemented several projects to protect the snow leopard in China. It has prepared a management plan for the Qomolangma National Nature Preserve, offering park officials guidelines for protecting and managing the endangered snow leopard, its prey and habitat. ISLT has translated and distributed snow leopard captive management techniques for eight Chinese zoos. In addition, ISLT has also developed a Snow Leopard Information Management System (SLIMS), which standardizes snow leopard data collection so research from all twelve countries in the snow leopard's range can be entered into a worldwide database accessible to interested researchers and organizations. This standardization of data results in more accurate assessments of snow leopard populations. In 1993, ISLT convened a training workshop on SLIMS and conducted hands-on field surveys in Gansu Province. Since 1992, ISLT has organized seven International Snow Leopard Symposiums and the seventh was held in Xining, Qinghai Province.

JOINT INSTITUTE FOR ENERGY AND ENVIRONMENT

<http://www.jiee.org>

Ongoing Projects (See CES 3): Global Climate Change, Renewable Energy for Rural China

Energy and Air Pollution

Partners: DoE, The Atlantic Council, Institute of Energy Economics (Tokyo), South-North Institute for Sustainable Development (Beijing), Confederation of Indian Industry (New Delhi)

Focus: Air Policy and Pollution

Funding: U.S. Department of Energy

Status/Schedule: Scheduled for 2001

Potential domestic and international measures to reduce air pollution from energy production, conversion and use will be explored in an international symposium scheduled for mid-2001, with the final publication of a policy paper in early 2002.

Reform of the Pollution Levy System

Partners: SEPA, Chinese Research Academy of Environmental Sciences

Focus: Air Policy and Pollution

Status/Schedule: Completed 1998

Joint Institute for Energy and Environment (JIEE) staff has worked with Chinese counterparts on developing incentive-based regulation of environmental pollutants since 1991 when they helped organize the first Chinese national workshop on the issue. JIEE has hosted scholars and study groups, provided consultants, and participated in decision meetings and other activities in China. They are now working with Chinese authorities and researchers on evaluation of ongoing pilot projects for pollution levy system reform and publishing and communicating results of previous work. The results of this work have been published in a lengthy report in Chinese (also available in English), in an article in *Environment* (Vol. 40, No. 7, September 1998, pp. 10-13, 33-38), and in various Chinese journals.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

<http://www.mit.edu>

Sustainable Urban Housing

Focus: Energy, Urban Development

Funding: Kann-Rasmussen Foundation (\$500,000), Large Scale Demo of Sustainable Buildings for Chinese Housing (\$55,000), Alliance for Global Sustainable Buildings (\$25,000), Vanke Architecture Technology Research Center (\$12,000), China Travel (\$12,000)

Status/Schedule: Initiated 1997, Targeted Completion December 2001

A heightened awareness of environmental concerns at the local, regional, and global levels has brought about a renewed prioritization of the development of sustainable buildings. Buildings are accountable for an increasingly large portion of our resources and energy. For developing countries, it is important to follow more environmentally conscious paths than earlier western world precedents with the consequent goal of assuring that they reach comparable standards of living. Due to the rapid growth of the Chinese economy, the Sustainable Urban Housing China Project is looking into increased efficiency of energy use in China as a key strategic point in achieving sustainable world development. It is projected that future buildings will consume about one-third of the total energy in China. The aim of this project is to both identify new technologies and applications of existing technologies that will significantly increase the efficiency of new and renovated Chinese buildings. The focus is on the design, prototype testing, and evaluation of several residential projects. Also of importance is the appeal to Chinese builders and consumers of such approaches toward energy efficiency, and a clear communication of the inherent advantages of sustainable strategies. The Massachusetts Institute of Technology (MIT) is carrying out conceptual designs and parallel technology studies on several large projects. To achieve viable solutions, designs make use of local materials and construction methods as well as local building conditions and lifestyles. The designs investigate individual building interiors and exteriors, as well as building groupings. Assumptions will be tested through the use of computational tools for the accurate modeling of computational fluid dynamics and energy use. Specifically, the MIT team has focused their attention on residential projects within the urban centers of China, Beijing, Shanghai, and Shenzhen. After completion of the demonstration projects, the MIT team will propose to assess building performance with respect to predictions established by technical analyses. An additional goal will be continued interaction with architects and developers in China through a series of workshops/seminars aimed at highlighting the project experiences and lessons learned. These workshops/seminars are scheduled for July 2001 and will take place in Beijing and Shenzhen.

MISSOURI BOTANICAL GARDENS

<http://www.mobot.org>

Ongoing Projects (See CES 3): Flora of China Project, <http://flora.harvard.edu/china>

NATIONAL COMMITTEE ON U.S.-CHINA RELATIONS

<http://www.ncuscr.org>

Ongoing Projects (See CES 3): Administrative Decentralization and Environmental Protection, Delegation Exchanges, Grassroots Environmentalism

Energy Dialogue

Partners: The Woodrow Wilson International Center for Scholars' Environmental Change and Security Project

Focus: Energy Policy

Funding: National Oceanic and Atmospheric Administration

Status/Schedule: Held April 10, 2000

In April 2000, the National Committee and the Woodrow Wilson Center co-sponsored a meeting on energy and environmental issues in Washington, D.C. The dialogue brought together representatives from government agencies, corporations, and foundations to discuss the challenges and potential for bilateral cooperation in promoting clean and efficient energy use in China and understanding the effects on human health, water and air pollution, and global climate change. The meeting included three keynote speakers: Leon Fuerth, Assistant to the Vice President for National Security Affairs; Howard Pierce, President and Chief Executive Officer, ABB Inc.; and Douglas Ogden, Vice President of the Energy Foundation. Those talks were followed by presentations by other foundation, business, and U.S. government representatives.

Local Environmental Leadership

Partners: Heilongjiang Province Environmental Protection Bureau, Chinese Academy of Sciences, Institute of Geography, Changchun Branch

Focus: Environmental Policy

Status/Schedule: Completed in November 1999

The National Committee brought eight Chinese environmental protection leaders to the United States in November 1999 for a two-week study tour to look at ways in which environmental policies and regulations are carried out at the local level in the United States. Chinese participants included scientists, engineers, a resource economist, and local-government administrators. The study tour included stops at nature reserves, lake regions, and wetlands and was designed to give the group a firsthand look at approaches to local water management in different regions of the United States. Destinations included a wastewater treatment plant; the Great Lakes Environmental Research Laboratory; the International Crane Foundation in Baraboo, Wisconsin; the South Lake Tahoe Public Utility District; and the U.S. EPA Region III offices in Philadelphia. The program exposed the delegation to a number of innovative and successful government-community partnerships, which highlighted the value of community participation. For example, the group visited a dairy farmer in Wisconsin who has been working with his county government to improve conservation of his land by meeting standards for barnyard runoff, streamside protection, and minimum tillage. One of the recurring themes of the study tour, which is associated with our multi-year decentralization and environmental protection project, was that the local economy has improved as a result of conservation practices and active community participation.

Wetlands Survey in Northeast China

Partners: Jilin and Heilongjiang Provincial Forestry Bureaus; International Crane Foundation

Focus: Biodiversity, Conservation Research

Discussions among the National Committee on U.S.-China Relations, the Heilongjiang and Jilin Provincial Forestry Bureaus, and Chinese and American field specialists identified the wetlands of Songnen Plain in northeast China as having regional, national, and global significance for migratory waterbirds and other biodiversity resources. The Chinese government at all levels has made great effort to safeguard these wetlands. Given the dry climate of the area and rapidly developing human communities, however, problems of water availability for the wetlands as well as for economic activities is becoming increasingly severe. In response to these threats, the National Committee organized an interdisciplinary, international team for a nine-day exchange program in the Songnen Plain to survey the conditions and meet with local officials and scientists. The National Committee team visited the Momoge, Xianghai, and Zhalong wetlands to gather information, visit critical sites, discuss threats and possible solutions, exchange viewpoints, and recommend research and conservation activities to be pursued by the relevant governmental agencies and institutes. A critical focus was on the interaction between the ecological conditions of the reserves and local communities and institutions, such as the water bureaus, local government, and reserve managers.

NATURAL RESOURCES DEFENSE COUNCIL

<http://www.nrdc.org>

ACCORD21 Building Demonstration Project

Partners: DoE, Ministry of Science and Technology (MoST), LBNL

Focus: Energy Efficiency

Funding: W. Alton Jones Foundation and MacArthur Foundation

Status/Schedule: Initiated 1999, Ongoing

Natural Resources Defense Council (NRDC) is coordinating an energy efficient new building demonstration project in Beijing that will track and measure the energy savings and greenhouse gas reductions resulting from integrated design strategies. The 130,000 square foot office building is planned for downtown Beijing and will house the offices for the Administrative Center for China's Agenda 21 and other government departments promoting China's sustainable development. The building also will contain an energy-efficiency demonstration and learning center. The center will exhibit the currently best technologies and

design strategies, as well as promising future alternatives. It is the only Sino-U.S. project to be considered a candidate for an Activities Implemented Jointly project under the UN Framework Convention for Climate Change. NRDC is working with DoE and MoST to develop appropriate baselines for the project that could have an important impact on future evaluation of greenhouse gas reductions from Chinese buildings. Last year LBNL and the National Renewable Energy Laboratory completed an in-depth energy savings analysis for the project. NRDC formed ACCORD21, a voluntary association of leading energy-efficient equipment, material, and design providers to coordinate the final design and implementation of the energy efficient features of the building. NRDC has sponsored three intensive building design workshops at Carnegie Mellon University (Pittsburgh) and in Beijing. These workshops developed detailed energy and environmental design recommendations for the building that are expected to reduce energy consumption by over 30 percent.

Controlling Power Plant Emissions

Partners: China Research Academy for Environmental Sciences, Regulatory Assistance Project, and Massachusetts Department of Environmental Protection

Focus: Emission Control

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

Status/Schedule: Initiation January 2001, Targeted Completion December 2002

NRDC is starting work to assist China in controlling its power plant emissions through generation performance standards, which limit emissions per kilowatt-hour of electricity produced. This approach levels the playing field for more efficient, less polluting facilities utilizing natural gas or renewable energy. China's State Environmental Protection Administration has expressed a strong interest in adopting generation performance standards as part of its efforts to implement China's new Air Pollution Control Law. This project will have two phases. The first phase, to last 12 months, is to develop the generation performance standards and policies. It will have three primary sub-tasks: 1) developing a generation performance standards for the power sector; 2) designing the generation performance standards -based pollution control policies; and 3) drafting generation performance standards -based energy and environmental policies for the electricity sector. The second phase, also 12 months, is the trial period, during which pilot projects aimed at testing the generation performance standards and generation performance standards -based policies will be undertaken. One or two provinces will be chosen for the demonstrations.

Energy Efficient Building Codes

Partners: Chongqing Construction Commission, Chongqing Architecture College, LBNL, Chinese Academy of Building Research

Focus: Energy Policy, Energy Research

Funding: DoE, the China Sustainable Energy Program of the Energy and Packard Foundations

Status/Schedule: Initiated 1999, Targeted Completion 2001

NRDC is assisting Chongqing, China's largest municipality, with the development and implementation of energy-efficient building codes for the residential and commercial/public building sectors. NRDC's work on Chongqing's building energy codes will serve as a model for building codes throughout China's transition climate zone. This climate zone (cold in winter and hot in summer) is one of China's three major climate zones and is home to 400 million people living in 11 provinces and two municipalities in the Yangtze River Basin. Implementation of the transition zone code could reduce Chinese carbon dioxide emissions by over 12 million tons per year. The Chongqing Construction Commission (CCC) has completed a set of energy efficiency standards for residential buildings, the first in the transition zone. NRDC is working with the CCC and the Chongqing Architecture College to clarify technical elements of the standard and to draft a set of implementing regulations. In addition, NRDC has held a number of workshops to share the U.S. experience in implementing codes and standards. Acting upon NRDC's suggestion, the CCC has also announced plans to develop an energy efficient code for commercial and/or public buildings. Once the codes are completed, NRDC will assist the Chongqing municipal government with one or more building demonstrations based on code requirements. NRDC will also help the city to investigate energy-saving and environmental construction materials and the potential to manufacture these materials locally.

Initiative for Taipei/Shanghai Cooperation on Fuel Cell Vehicles and Sustainable Transportation

Partners: South-North Institute for Sustainable Development, Taiwan Institute for Economic Research

Focus: Emission Control

Funding: W. Alton Jones Foundation, Public Welfare Foundation

Status/Schedule: Initiated 2000, Targeted Completion 2001

With their high efficiency and extremely low (and potentially zero) emissions, fuel cells offer enormous potential for use in a

range of vehicles. Fuel cell technologies are developing rapidly and stand poised to play a significant role in the future of transportation throughout the world. In rapidly developing regions such as Asia, fuel cell-powered vehicles offer countries the opportunity to meet the growing desire for mobility while avoiding the heavy environmental and health costs of hydrocarbon fuels. With the generous support of the W. Alton Jones Foundation, Taiwan has made a great deal of progress in the development of the world first fuel cell scooter. The purpose of this initiative is twofold. First, the NRDC hopes to accelerate the commercialization of fuel cell vehicles—including scooters, buses and automobiles—in Asia by combining the research and development expertise and investment power of Taiwan with the favorable manufacturing and market conditions in China. The NRDC plans to leverage these business agreements into a city-to-city environmental cooperation agreement that will focus initially on fuel cell vehicle development, but could broaden to include environmental regulations and sustainable transportation alternatives. Assisting Shanghai in the development of a comprehensive long-term strategy for fuel cell vehicle development will also help the city develop favorable supporting policies, plans, and programs. Second, NRDC hopes that by bringing together municipal governmental officials from China and Taiwan for joint collaboration on non-controversial environmental issues of benefit to both sides, NRDC will heighten mutual understanding and create lasting ties that will help to reduce the dangerous tensions across the Taiwan Straits.

Policy Options for Demand-Side Management in China: Analysis and Recommendations

Partners: State Power Company Energy Research Institute, Beijing Energy Efficiency Center

Focus: Energy Management

Funding: The China Sustainable Energy Program of the Energy and Packard Foundations

Status/Schedule: Initiated January 2001, Targeted Completion December 2001

Compared with international practices in energy efficiency and advanced technology deployment in the utility sector, China has much lower electrical end-use energy efficiency levels and relies extensively on outdated technology. Overall, energy efficiency in China's power sector is three-quarters that of advanced international standards. Increasing China's electric energy efficiency would be a cost-effective way to both utilize limited energy resources and minimize the environmental impacts resulting from the use of fossil fuels. At present, the utility sector in China is responsible for one-third of China's total coal consumption, over 30 percent of its sulfur dioxide emissions, more than 25 percent of its carbon dioxide emissions, and about one-fifth of nitrogen oxides emissions. The main purpose of this project is to identify and assess the policies and strategies available to China for improving its electrical end-use efficiency. Once NRDC has completed a full assessment of the barriers to utility demand-side management in China, NRDC will develop recommendations that are targeted to address each of these barriers. NRDC's initial assessment is that the most promising strategies will fall into several categories: price and revenue reforms, financial incentives, legal reform, and regulatory mandates.

Transforming China's Fertilizer Industry

Partners: Chongqing Municipal Economic Commission, Energy and Environment Technology Center

Focus: Energy Management

Funding: W. Alton Jones Foundation and Shell Environment Initiative

Status/Schedule: Initiated 1998, Targeted Completion 2000

Fertilizer production is one of the most energy intensive and environmentally polluting industries in China, accounting for 20 percent of all industrial electricity consumption. China's fertilizer plants use 40 percent more energy per ton of production than plants using modern European and U.S. technology. China is the world's second largest fertilizer producer. Fertilizer production in Chongqing consumes over 1 million tons of coal equivalent per year, resulting in the emission of nearly 2 million tons of carbon dioxide and thousands of tons of sulfur oxides, nitrogen oxides, and particulates. Chongqing represents about 5 percent of China's national fertilizer production. NRDC is working with the Chongqing municipal government on a comprehensive case study facility for demonstrating advanced natural gas-based fertilizer production technology and moving the product mix toward modern fertilizers that are more stable and have higher nutritional value. The pre-feasibility study will also analyze the possible linkage of closing and/or converting coal-fired fertilizer plants to compound fertilizer mixing facilities to accommodate the output from the expanded natural gas fertilizer production in Chongqing.

NAUTILUS INSTITUTE FOR SECURITY AND SUSTAINABLE DEVELOPMENT

<http://www.nautilus.org>

Scenarios for the Future of U.S.-China Relations

Partners: Fudan University Center for American Studies, South-North Institute for Sustainable Development, Tsinghua University Environment Technology Center

Focus: Environmental Policy, Bilateral Relations

Funding: The Ford Foundation and the Rockefeller Brothers Fund

Status/Schedule: Initiated 1999, Completed March 2001

The project used a special methodology for looking at complex issues known as “scenarios.” Pioneered by the Global Business Network, scenarios enable decision-makers to make better decisions today by giving them a clearer sense of what tomorrow may bring. In this case, we applied the methodology to create several possible 10-year scenarios for how the relationship between the United States and China may develop. The Scenarios were created during two roundtable workshops that convened twenty U.S. and Chinese thinkers from the fields of international relations, energy policy, environmental policy, and security/disarmament. The scenarios produced at the workshops were both positive and negative. A few of them implied a power struggle between the United States and China, as the latter grows stronger economically. The common thread through all of the scenarios was that cooperation is possible and beneficial to both nations. The implication for policymakers is that the risks for conflict are many and to avoid such scenarios will require diligence and attention to the relationship. At <http://www.nautilus.org/enviro/beijing2k> the final scenarios workshop report can be found.

PACIFIC ENVIRONMENT AND RESOURCES CENTER

<http://www.pacificenvironment.org>

Direct Support to Grassroots Environmental Initiatives

Partners: China Green Students Forum, U.S. Global Greengrants Fund, the Research Center for Ecological and Environmental Economics of the Chinese Academy of Social Sciences

Focus: Environmental Research, Environmental Training

Status/Schedule: Initiated 2000, Ongoing

The Pacific Environment and Resources Center (PERC) protects endangered ecosystems around the Pacific Rim through a combination of grassroots advocacy, environmental education, and law and policy analysis. In China during the year 2000, PERC and its partners have supported the publication of a training guide for student environmentalists, Earth Day activities by student environmentalists in the city of Dalian, a youth project to investigate development alternatives in Shanghai, and conservation and education programs for the endangered Saunder's Gull. PERC is also working with partners in Russia to investigate ways to make timber trade between Russia and China more sustainable.

PESTICIDE ACTION NETWORK NORTH AMERICA

<http://www.panna.org>

World Bank Accountability Project - China Case Study

Partners: Center for Community Development Studies (Kunming, Yunnan)

Focus: Agriculture Management

Funding: Rockefeller Brothers Fund

Status/Schedule: Initiated 2000, Targeted Completion 2002

The goal of this project is to increase the adoption of ecologically sound pest management methods in a World Bank-supported agricultural development project in China while empowering local communities to shape their own development. Pesticide Action Network North America's (PANNA) current plan is to focus on the Anning Valley Agricultural Development Project in southern Sichuan. Research conducted in collaboration with residents of a World Bank-supported project will focus on pesticide use and local participation in project decision-making. The research findings will provide the basis for discussions with provincial and national level agricultural extension staff and World Bank staff regarding implementation of the World Bank's policy on ecological pest management. The project will also involve efforts to link local project managers with experts in China who can help farmers develop ecological pest management approaches suited to local crops and conditions. The Kunming-based nongovernmental organization Center for Community Development Studies (CDS) works to empower local communities to improve their welfare and reduce adverse environmental impacts. CDS uses a participatory approach to rural development, training community members in interview and group discussion techniques that ensure problems and solutions reflect actual conditions, not simply the assumptions and expectations of the project managers. The staff pays particular attention to addressing the needs of women, the poor, and minorities by involving them in the project design and implementation process. CDS is also dedicated to helping local and provincial government agencies develop new methods for assessing and meeting the needs of local communities.

Dongfang County Rural Land Tenure Reform Pilot Project

Partners: China Institute for Reform and Development, Dongfang County Government, Hainan Province

Focus: Agriculture Policy, Land Management

Status/Schedule: Initiated 1998, Ongoing

Since 1998, Rural Development Institute (RDI) and the China Institute for Reform and Development have worked with officials in Dongfang County to develop and implement a series of rural land tenure reforms. In Baoban Township within the county, farmers received 70-year land use rights to arable land as an incentive to increase productivity-enhancing investments and to encourage environmentally sustainable farming practices. The project has encouraged environmentally sustainable farming practices in Dongfang County by providing farmers with more equitable access to cultivable “wasteland” resources, and by protecting household rights to wasteland from incursion by local officials.

Land Management Law Monitoring Survey Project

Partners: Renmin University

Focus: Agriculture Policy, Land Management

Status/Schedule: Initiated 1998, Ongoing

Revisions to China's Land Management Law (LML) require that China's 200 million farm households be granted 30-year use rights to collectively-owned agricultural land, and that these new rights be guaranteed in written contracts. The goal of this project is to obtain a broad-based and accurate assessment of the extent and nature of implementation of land rights under the LML, as well as understand the perceptions and preferences of farmers regarding their rights to land. Based on this assessment, conclusions and recommendations concerning both current implementation of existing rights and further legislative reform are developed for direct communication with Chinese policymakers and legislators, and for publication in the United States and China. The first round of surveys, comprised of 1,621 farm households in 17 of China's major agricultural provinces, was completed in August 1999. The survey results indicate China has made substantial progress towards its goal of implementation of 30-year rural land use rights, but a number of important issues remain to be addressed in order for China's 870 million farmers to receive long-term land tenure security. These results have been published in *Guanli Shijie* (a Chinese management journal) and *Pacific Rim Law & Policy Journal* (University of Washington School of Law). A second round of surveys will be conducted in the same 17 provinces in August 2001 to investigate: 1) additional progress towards LML implementation; and 2) the impact of long-term land tenure security on farmer investment and sustainable farming practices among farmers who have received 30-year land use rights.

Legal and Policy Approaches to Land Tenure on Grassland and Forest Land

Partners: Center for Community Development Studies (CDS)

Focus: Land Policy, Land Management

Status/Schedule: Initiated March 2001, Targeted Completion March 2003

Land tenure reforms based on long-term, secure individualized rights have promoted sustainable land use practices and increased productivity on arable land in China. Existing Chinese laws and policies contemplate similar approaches to land tenure on non-arable land, including forestland and grassland. In contrast with arable land, however, recent research indicates that such approaches to land tenure have resulted in overstocking and degradation of grassland and resource mining on forestland. Under this project, RDI and CDS will conduct research on alternative approaches to land tenure on grassland and forestland. Household-based field interviews and large-scale sample surveys will be conducted in provinces where grassland and forestland resources are plentiful. Based on the research findings within China and analysis of comparative approaches to grassland and forestland tenure, RDI and CDS will develop a detailed set of recommendations for legal and policy reforms to China's grassland and forestland tenure systems. Research will focus on the need for a flexible legal and policy framework that allows localities to develop and implement approaches that account for their specific ecological conditions and provide a balance between the productivity, environmental protection, and poverty alleviation functions of land.

Rural Land Tenure System Legal and Policy Reform Initiative

Partners: Development Research Center of the State Council (DRC), The World Bank

Focus: Land Policy

Funding: World Bank Institutional Development Fund Grant (IDF)

Status/Schedule: Initiated April 2000, Targeted Completion March 2002

Under the Household Responsibility System (HRS), introduced by the Chinese government in 1980, the land use rights of Chinese farmers to collectively owned land have typically been short-term and insecure. This land tenure insecurity has discouraged farmers from making investments to increase productivity and to engage in environmentally sustainable farming practices. In recent years, the Chinese government has identified rural land tenure insecurity as one of the most important constraints to rural development, and has initiated a second round of rural land tenure reforms with the adoption of the 1998 LML. The goal of this massive reform effort is to provide China's nearly 200 million farm households with secure, long-term and clearly defined legal rights to their land. With support from the World Bank IDG Grant, RDI and DRC have provided technical assistance to Chinese legislators and policymakers in support of these rural land tenure reforms. Legal and policy recommendations are developed on the basis of household-based rural fieldwork conducted by RDI and DRC researchers throughout China, as well as through analysis of comparative approaches to rural land tenure reform. Training on implementation of rural land tenure reforms will be provided to local officials, and research results will be disseminated as part of a national symposium to be held in Beijing.

RESEARCH CENTER FOR ECO-ENVIRONMENT SCIENCES, IOWA STATE UNIVERSITY

Sustainable Development in Henan

Partners: Chinese Academy of Science (Beijing), Henan Provincial Ministry of Science and Technology, Henan Fundamental and Applied Sciences Research Institute (HFASRI), Zhengzhou University (ZZU), Nanyang Institute of Science and Technology, Nanyang Agenda 21 Office, Nanyang Municipality, Guanghui Machine Manufacturing Co. (Nanyang), Henan Center for Comprehensive Utilization of Coal Fly Ash (HCCUCF), First Science and Technology University of Kaoshiung (Taiwan)

Focus: Energy Management, Water Management

Funding: Iowa State University (ISU) grant (\$43,000), UNESCO (\$20,000), Chinese governmental grants on travel and living expenses for approximately 10 visits by ISU faculty members, Guanghui Machinery Manufacture Company donated material and construction of biomass gasifier demonstration (about \$100,000), HFASRI, ZZU, and NIST have also contributed both financial support and the participation of their faculty members.

Status/Schedule: Initiated 1999

There are four major components of this project: 1) Renewable energy and material recycling. This component contains three parts. First, the center began biomass thermal gasification activities in the summer of 1999. A fluidized bed gasifier has been constructed in Lei Zhuang village in Nanyang County, Henan and tested successfully. Today the gasifier supplies cooking gas to more than 100 homes. The second phase targeting small industrial applications has also begun. This phase involves removing dry scrubber tar and using producer gas to drive the fluidized bed. The second and third components focus on comprehensive utilization of coal fly ash and hydrogen production by using a biological approach. A laboratory has been established at HFASRI/ZZU and small laboratory levels of hydrogen production has been produced routinely; 2) Wastewater treatment. A research program has been established at HFASRI/ZZU; 3) Watershed modeling. This component of the project is currently targeted at the rivers within the Zhengzhou Municipality region (population of 5.6 million). The goal is to first establish the validity of the watershed modeling software and then use it to make investigations in the province; and 4) Pollution and waste reduction program. The Nanyang Institute of Science and Technology has established a Pollution and Waste Reduction Center to serve small businesses in Nanyang Municipality (population of more than 10 million). A general survey of Nanyang's small industries and their environmental problems has been conducted.

ECOLOGY AND CULTURE ORGANIZATION

Gaoligong Mountain International Forestry Park

Partners: The Local Gongshan Government, the Kunming Botanical Research Institute of the Chinese Academy of Social Sciences

Focus: Biodiversity, Environmental Management, NGO Capacity Building

Status/Schedule: Initiated 1998

This project has three main objectives: 1) to establish the North Gaoligong Mountain International Forestry Park and Botanical Garden in Gongshan and to create the Scientific Research Base; 2) to set up of an Information Platform; and 3) to create an Eco-Culture Organization—an NGO or community-based organization to be located inside the park to serve as a platform for conception, coordination, and development of projects on environmental issues and rural development. Another focus of this project will be given to Eco-travel to promote access to the area, by designing plant hunter's trails, minority routes, and providing logistics for trips. The local government is in charge of the legal aspect of this project. Ecology and Culture Organization will be

responsible for the management and development of the park. The NGO will coordinate of all the projects. A Management Board composed of different parties recognized for their expertise in their fields of activity also will be created.

THE NATURE CONSERVANCY

<http://www.tnc.org>

Yunnan Great Rivers Project

Partners: Yunnan Provincial Government (Provincial Planning Commission, Department of Forestry, and other Provincial Bureaus and Departments and related Prefecture offices), Institute of Forest Planning and Design, Southwest College of Forestry, Chinese Academy of Science's Kunming Institute of Botany and Kunming Institute of Zoology, Yunnan University Institute of Ecology

Focus: Biodiversity, Conservation Management

Funding: \$3 million from Yunnan Provincial Government, \$2 million from The Nature Conservancy

Status/Schedule: Initiated December 1998; Phase I Completed December 2000

The Yunnan Provincial government asked The Nature Conservancy (TNC) to advise them on conservation in northwest Yunnan, an endeavor known as the Yunnan Great Rivers Project (YGRP). In 1999, TNC joined the Yunnan Provincial Planning Commission in forming the Joint Project Office to conduct conservation and development planning in northwest Yunnan, which includes 15 counties located in four prefectures (Lijiang, Diqing, Nujiang, and Dali). The project is to occur in two phases. Phase I, which ended December 2000, was to prepare an extensive conservation plan for the YGRP area that looked at broad-scale patterns of biological and cultural diversity. Phase I aimed to identify: 1) areas of cultural and biodiversity significance; 2) region-wide or multi-site threats to this diversity; and 3) conservation activities needed to maintain this diversity. It is this broad-scale conservation planning expertise that TNC was able to contribute to the project. Known as the Eco-regional Planning Framework, the process involves the efficient design and selection of sites of greatest conservation importance. TNC also has researched appropriate approaches to compatible economic and regional development aimed to maintain and enhance the enormous diversity of the project area. The Action Plan, which integrates cultural and biodiversity conservation with compatible economic and regional development, will become part of the Yunnan Provincial government's 10th five-year plan. Phase II of the YGRP builds on Phase I by working at the local level by implementing conservation and development actions at the sites of high cultural and biodiversity significance identified during eco-regional planning. During Phase I, several sites were recognized as being especially significant for cultural and biodiversity conservation, as well as for economic development by counties and prefectures. TNC and its partners will develop local conservation and development plans for these sites during Phase II. Similar to the eco-regional planning methods in Phase I, TNC can use its expertise at the local level the Site Conservation Planning Framework. This will be the framework from which cultural and biodiversity conservation actions will take place in the target sites. Such actions will include compatible economic development activities and will focus on abating the critical threats to biodiversity in the region.

THE WORLD CONSERVATION UNION (also IUCN)

<http://www.iucn.org>

China Strategy and Programme Development

Partners: Biodiversity Working Group of the China Council, Institute of Zoology, SEPA, the Chinese Academy of Science, the State Forestry Administration, the Ministry of Agriculture, Fisheries and Nature Conservation, Wuhan University

Focus: Conservation Policy, Environmental Management

Status/Schedule: Initiated October 2000, Targeted Completion 2004

The key focus of developing a conservation programme and opening an office in China is to alleviate the extinction crisis and preserve ecosystem integrity in this mega-diverse country, which is ranked third in the world for biodiversity. Areas of present and future cooperation include integrated ecosystem management, staff exchanges with SEPA, wetlands conservation, strengthening the environmental law framework, environmental impact assessment, sustainable forest management, and marine conservation, including coral reefs. Focal points have been set up in several institutions and Chinese scientists and experts participate in specialist groups of commissions like the IUCN Species Survival Commission, the IUCN Law Commission and the IUCN World Commission on Protected Areas.

UNIVERSITY OF WISCONSIN

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

Community-Based Management of Natural Resources

Partners: Inter-Agency Consortium of Yunnan Province, Chiangmai University of Thailand, Sustainable Management and Biodiversity Conservation, U.S.-China Environmental Fund, GEF, United Nations Development Programme (UNDP).

Focus: Biodiversity, Conservation Management

Funding: \$750,000. Direct funding is from GEF. In kind contributions will come from the Yunnan Provincial Governor's Office, Yunnan Academy of Social Science, Yunnan Institute of Geography, Yunnan Institute of Botany, Yunnan Institute of Zoology, Yunnan Normal University, Yunnan Bureaus of Agriculture and Forestry, Yunnan Commission of Science and Technology, and Yunnan Commission of Minority Affairs, University of Wisconsin, Chiangmai University, the International Institute of Rural Reconstruction, and the U.S.-China Environmental Fund.

Status/Schedule: Initiated November 2000, Targeted Completion October 2003.

This project focuses on the sustainable management of upland ecosystems and biodiversity conservation by local communities. Work is being performed to examine the role of indigenous knowledge systems in environmental management and the formation and functioning of nature reserve co-management and local watershed councils. A major goal of this project is to link rural communities in selected watersheds to: 1) provincial and national institutions in China (and eventually in Thailand, Laos, and Vietnam) for research; 2) training and networking activities for policymakers; and 3) researchers and officials from government institutions, nongovernmental organizations and private sector institutions. The GEF funds this project as a Medium Sized Project and it will be implemented through the United Nations Development Programme.

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

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

Efficient Fertilizer Production in Chongqing

Partners: Tulane University, Tsinghua University, NRDC, Green and Clean Engineering Ltd. Hong Kong, Chongqing City government, Jian-An Chemical Company (JACC), South-North Institute for Sustainable Development, and other Chinese industries

Focus: Energy Policy

Funding: NRDC (approximately \$100,000), Shell Environmental Initiative (SEI) (\$45,000) and the Energy and Environment Technology Center (EETC) provides staff time and office operational support

Status/Schedule: Initiated January 1999, Completed December 2000

The US/China Energy and Environment Technology Center will assist the Jian-An Chemical Company (JACC) with international consultants to evaluate technology options and to prepare a detailed pre-feasibility study with educational /promotional proposals to enhance the production and adoption of complex fertilizers in China. The project's outcomes include a detailed English-Chinese bilingual pre-feasibility study for producing 30,000 tons/year high-yield complex fertilizer at JACC, which should be ready for project financing by 2000. The U.S. consultant's input is a major component of the study report and will help open the U.S. technology and equipment sales in this sector.

Energy Conversion System Optimization for Steel Mills

Partners: BaoSteel and Ma-An-Shan steel mills (Near Shanghai)

Focus: Energy Management

Funding: Financial support through Tsinghua University from Chinese industries

Status/Schedule: Initiated January 1998, Targeted Completion December 2001

This project aims to introduce the concepts of modern energy management for steel mills including energy system auditing and optimization for reducing cost of operation and environment impacts. To obtain these goals the project will conduct in-depth analysis of the thermal system's energy consumption/output for each major component to formulate a computer simulation model. The model is used for optimizing fuel allocation and steam balance. A computer model was initiated for BaoSteel in 1999, optimized operational procedure to be developed in 2000. Ma-An-Shan Steel Mill has indicated to join the project. The ultimate outcome will be measurable energy savings, reduced cost, and less pollution.

Health Effects of Clean Coal Technology Transfer

Partners: Center of Bioenvironmental Research, Tulane-Xavier University, and other institutions

Focus: Energy Management, Emission Control

Funding: Estimated cost of \$16,000

Status/Schedule: Initiated September 1998, Targeted Completion June 2001

This project is a multi-year study to assess and model health aspects and costs of current coal technologies used in China along with benefits resulting from implementation of clean coal technologies. This analysis will include a spatial analysis via geographic information systems (GIS) of residences in relation to sources of pollution from coal along with mapping of health factors identified through a survey instrument.

Integrated Resource Planning for Major Developing Cities in China

Partners: Tsinghua University, MIT, U.S. National Labs, Chinese City Governments, and other Chinese agencies

Focus: Energy Management, Emission Control

Funding: SEI, EETC cost shares staff time and office operations

Status/Schedule: Initiated April 1998, Targeted Completion April 2002

The main focus of this project is to develop comprehensive energy plans for major cities in China for adopting clean energy technology and reduce environment impacts. Following the standard integrated resource planning (IRP) procedures, the project will establish a professional team at each city, collect data on energy supply, consumption, environmental conditions, build computer model, simulation studies, and develop options with IRP implementation strategies. A two-year effort began in mid-2000. Expected outcomes of this project include computer model and implementation strategies for adopting U.S. clean energy in the participating cities. The model and strategies can also be expanded to cover other parts of China. This project could lead to increased sales of U.S. technologies and equipment, better energy conservation, and less pollution.

Technological and Economic Feasibility Study for Marketing Gasification Technology in China

Partners: Institute of Gas Technology, Tulane University, Shanghai Coking Corporation and other Chinese industries

Focus: Energy Research

Funding: Estimated cost of \$50,000

Status/Schedule: Initiated 1 June 1998, Completed 31 December 2000

This project assisted in the resolution of existing operational problems in gasification in Shanghai, with pre-feasibility studies focused on industrial fuel gas, ammonia, and power generation in Shanghai and Hebei. By the end of year 2000, the Hebei pre-feasibility studies were completed. The pre-feasibility study is the necessary precursor for project financing to develop the U.S. sale of the gasifiers to China.

U.S.-China Clean Coal Technology Center

Partners: Clean Coal Engineering Research Center, China Coal Research Institute, and other Chinese industries

Focus: Emission Control, Energy Management

Funding: Estimated cost of \$35,000 per year

Status/Schedule: Initiated 1999, Ongoing

By creating a clean coal technology (CCT) center, this project aims to work directly with the Chinese coal industry for expanding the US market share of CCT. This multiple-year effort focused on the Chinese CCT market analysis, SO₂ reduction, CCT and power plant performance, and industrial/commercial project development. The U.S.-China Clean Technology branch center was established in 1999 and market analysis was initiated in mid-2000. The expected outcomes of this center include in-depth market analysis studies that can help the U.S. industry planning for CCT market development in China, project proposals that are ready for project financing and/or multilateral project funding. This project aims to promote increased sales of U.S. technologies and equipment to China.

U.S.-CHINA ENVIRONMENTAL FUND

Ongoing Projects (See CES 3): Biodiversity Conservation and Forest Management, The Great Wall at Badaling, High School Environmental Education Program, Lead Poisoning Prevention in China, National Parks, World Heritage Sites

WORLD WILDLIFE FUND – CHINA PROGRAMME OFFICE (WWF-China)

<http://www.panda.org/resources/countryprofiles/china/page1.htm>

<http://www.wwfchina.org>

Ongoing Projects (See CES 3): Beijing Energy Efficiency Center, Giant Panda Conservation, Management Plan for the Giant Panda and Its Habitat, Development of Environment Education, Capacity Building, Conservation in Baimaxueshan Nature Reserve, Conservation in Sichuan's Wanlang Reserve, Conservation in Xishuangbanna Prefecture, Environmental Education Training Center, Environmental Education Workshop and Teacher Training and Support

(Editor's Note: Funding of the projects listed below is from within the World Wildlife Fund (WWF) global network except where listed in specific project entries)

China Air Conditioner Energy Efficiency Standard Project

Partners: Beijing Energy Efficiency Center

Focus: Energy Efficiency

Status/Schedule: Initiated 1997, Completed 2000

This World Wildlife Fund–China Programme Office (WWF-China) project produced two technical reports that aided in the drafting of national air conditioner energy standards in China. An international workshop on the subject was held in Beijing with Chinese and U.S. experts in attendance. A draft energy standards plan is to be completed in 2000.

China Timber Trade Survey

Partners: Chinese Academies of Forestry and Social Sciences

Focus: Conservation Management

Funding: The WWF/World Bank Alliance for Forest Conservation

Status/Schedule: Initiated and Completed in 2000

One major concern regarding China's 1999 logging ban is that when combined with liberalization of trade, the ban will displace forest destruction from China to other countries. The purpose of the China Timber Trade Survey is to clarify this threat. Next steps will include measures to help prevent the importation of illegally harvested timber into China and see how demand-side measures can control the increase in consumption of forest products. This will be combined with certification efforts to reduce demand for imports by restoring a vibrant, sustainable timber harvesting industry in China.

Evaluation of Wind Power Development in China

Partners: Jikedian Renewable Energy Development Center

Focus: Energy Research

Status/Schedule: Initiated 1999

Many wind energy development projects have been undertaken in China through international aid programs, but there has been little post-project evaluation to assess the strengths and weaknesses of different approaches. This project is designed to provide such assessments, beginning with an examination of off-grid, household-based wind turbine development in Inner Mongolia. The investigation included a survey on the needs and institutional barriers for disseminating small wind turbines. Similar surveys are being conducted in China's coastal regions and on a few islands.

Environmental Educators' Initiative for China

Partners: Chinese Ministry of Education

Focus: Environmental Education

Funding: British Petroleum

Status/Schedule: Initiated 1997, Targeted Completion 2003

This project aims to embed environmental education within the school curriculum by bringing environmental education into the mainstream of primary and secondary education in China. The project integrates teacher training, curriculum development, and educational resource development strategies by working with China's major teacher training centers. Initially, (1997-2000) Beijing Normal University, East China Normal University, and Southwest China Normal University were main partners. WWF is also working with the People's Education Press, the publisher of 75 percent of China's primary and secondary textbooks, to incorporate environmental education into the school curriculum. Resources are also being developed to support formal and

community education projects. The second phase of the project (2001-2003) will include ten of the major Normal Universities in China and development of Environmental Education as a professional discipline. A Masters Degree program will be established, as well as shorter-term certificate courses and a professional association and journal for environmental educators. WWF-China has also been asked by the Ministry of Education to assist in development of national guidelines for environmental education, which will be completed in 2001.

Forest Programme

Partners: Chinese State Forestry Administration, forest-dependent communities and various Chinese enterprises

Focus: Biodiversity, Conservation Management

Status/Schedule: Initiated 1996, Ongoing

In 1998, China announced the National Natural Forest Protection Programme that restricted logging in natural forests in much of the country. This logging ban and associated policies, and their impacts on forests inside and outside of China are of major concern for WWF. While the 1998 logging ban and associated policies present a wonderful opportunity to conserve biodiversity and ecosystem functions such as watershed protection, there exists, however, a danger that if not implemented well, these policies could create negative impacts on forests and forest-dependent communities within and outside China. WWF-China has already begun a project on forest restoration in Sichuan, and a multiple province study of the impacts of the policy to return sloping agricultural land to forests and grasslands. A study of the current status of forest ecosystems in southwest China has been started and will be used to identify key forest areas for focusing future work. The goal is not only to insure that a representative sample of the full range of forest biodiversity is protected, but also to work with forest-dependent communities, government, and enterprises to move toward continued, sustainable use of forest resources. One increasingly important tool for promoting sustainable forestry is certification, and WWF-China is working with the Chinese State Forestry Administration to develop a Working Group on Forest Certification and to develop standards and to promote certification at the national level. A "Buyer's Group" has been developed, composed of companies in Hong Kong that want certified forest products. Pilot certification of timber production in northeast China forests will be developed to show how the process could work in China.

Integrated Conservation and Development in Pingwu County

Partners: Local governments and communities

Focus: Conservation Management

Status/Schedule: Initiated 1998, Ongoing

This project aims to assist the sustainable development of Pingwu County along with meeting the area's conservation needs. WWF-China is working with the local government and communities to protect habitats from large-scale commercial logging and to address the impact of logging on the local economy. The project has focused on the following areas: 1) participatory planning of forest land use; 2) wildlife conservation in Pingwu County and the effective management of Wanglang Reserve; 3) exploration of alternative livelihoods such as eco-tourism and non-timber forest products; and 4) local capacity and awareness building. WWF-China is also assisting Pingwu County leaders in seeking new sources of support for conservation and development activities.

Living Yangtze Program

Partners: China Youth Development Foundation, State Forestry Administration, Hunan Provincial Government and Forestry Department, Hanshou and Yuanjiang city governments, CAS, State Council Development Research Center, Chinese Academy of Agriculture Sciences

Focus: Water Management, Conservation Management

Status/Schedule: Initiated 1999, Ongoing

The Central Yangtze, including tributaries and wetlands in a broad floodplain covering most of Hunan, Hubei, and Jiangxi provinces, is the heart of one of the world's most productive freshwater systems. The once bountiful region is in distress due to excessive reclamation of wetlands, siltation, over-fishing, pollution, and a flood control system overly reliant on structural engineering. The frequency and severity of floods are increasing, fish stocks are declining, and many species of wildlife are seriously threatened. The Partnership for a Living Yangtze Program aims to help the government and communities of the region to recover a living Yangtze ecosystem within 25 years through wetland restoration, conservation, and sustainable use.

Panda Program

Partners: Sichuan Forest Department, State Forestry Administration

Focus: Conservation Management

Status/Schedule: Initiated 1980, Ongoing

Focusing on the conservation of a flagship species—the giant panda—helps to protect and maintain all the rich biota of this species' temperate forest home. Broader conservation issues such as policy formation and decision-making, capacity building, and local sustainable development are also addressed through panda projects. The Panda Program has developed a strategic plan designed to strike at the root causes threatening the giant panda population and its habitat. Sub-projects include cooperative work with the State Forestry Administration to design and implement a national survey of giant pandas and their habitat, an integrated conservation and development project in Sichuan (see Forest Programme above), and training for protected area staff and managers.

Pilot Projects in Wetland Restoration and Use

Partners: Local governments, International aid organizations

Focus: Water Management, Conservation Management

Status/Schedule: Initiated 1999, Ongoing

WWF-China is working with local governments and farmers to seek alternative flood plain management and agriculture approaches suitable for the regions along the Central Yangtze. The first pilot site is Qingshan Polder, an eleven-square kilometer area of reclaimed farmland that was converted back to wetland by the government of Hanshou County and added to the West Dongting Lake Nature Reserve. This action displaced local residents to higher ground, and now alternative livelihoods must be found. The WWF-China Yangtze Program is helping the local government nature reserve administration and farmers to develop economic activities that take advantage of the ecological functions of wetlands, such as fisheries and animal husbandry. The program also monitors the ecological changes that take place as the wetland recovers its natural function and attributes. WWF-China also plans to work to develop eco-tourism as a new industry in the region. Two other pilot sites are underway, one in Hunan, and the other on the north side of the Yangtze in Hubei.

Tibetan Antelope Protection

Partners: Secretariat of Convention on International Trade in Endangered Species (CITES), China CITES Office, Tibetan Forestry Department, International Fund for Animal Welfare

Focus: Biodiversity, Conservation Management

Status/Schedule: Initiated 1999, Ongoing

To address the issue of declining Tibetan antelope population, the WWF-China co-sponsored the International Workshop on the Conservation and Control of Trade in Tibetan antelope in Xining, China. Participants came from countries where the antelope lives in the wild or where Antelope products are smuggled and consumed. Delegates signed the Xining Declaration on the Conservation of Tibetan Antelopes and discussed actions needed to ensure the survival of the species. WWF-China then launched a global *Don't Buy Shabtoosh* (a material produced from Tibetan antelopes) campaign to educate traders and consumers. WWF-China also provided support to anti-poaching patrolling in Tibet's Chang Tang reserve. By early 2000, it was reported that the black market price of antelope skins had declined, indicating a reduced demand.

Young Citizens' Initiative for Water

Partners: Beijing Association of Science and Technology, Local Schools

Focus: Environmental Education

Funding: NOVIB (Oxfam Netherlands)

Status/Schedule: Initiated 2000, Ongoing

This project uses a service learning model to guide students to help their communities and their local watershed. Water is used as a theme to explore issues concerning the local community. Participants include university lecturers, teachers, textbook developers, and members of the Beijing Association of Science and Technology and the Beijing Environmental Education Activity Center.

WORLD RESOURCES INSTITUTE

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

Ongoing Projects (See CES 3): Climate Policy, Air Pollution and Public Health: Estimating Mortality and Morbidity from Fossil Fuel Consumption in Major Urban Areas in China

China Business Environment Learning Leadership

Partners: Center for Environmental Education and Communication, Renmin University, Tsinghua

University, Peking University, Fudan University, the Hong Kong Polytechnic University, the Wharton School at University of Pennsylvania

Focus: Environmental Education

Funding: GE Fund, Alcoa Foundation, Netherlands Ministry of Foreign Affairs

Status/Schedule: Initiated 2000, Ongoing

The goal of the Business Environment Learning Leadership project (BELL) is to integrate environment and sustainable development issues into business school curricula. BELL trains and promotes networking among business school faculty, publishes curriculum, supports course development, and helps business schools understand changes in industry practice and skill needs that are relevant to curriculum development and research. In North and Latin America, the BELL project has produced over 40 case studies covering the intersection between profitability and sustainability in such areas as accounting, finance, marketing, organizational behavior, and production. For the China BELL project, WRI partnered with the schools listed above to plan an inaugural conference. The conference was held in the fall of 2000 in Beijing, and marked the launch of China BELL. For more information visit the BELL Web site: www.chinaeol.net/bell.

Resources Policy Support Initiative

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

Focus: Conservation Management, Conservation Policy

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

Status/Schedule: Initiated 1997, Targeted Completion 2002

The Resources Policy Support Initiative (REPSI) in Montane Mainland Southeast Asia 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 the WRI and many local and international institutions. In China, REPSI focuses on Yunnan Province where WRI is currently analyzing the effects of decentralized natural resource management on local ecosystems and people's welfare and facilitating a regional dialogue on needed innovations in regional governance for transboundary natural resources.

PART III. CHINESE AND HONG KONG ENVIRONMENTAL NONGOVERNMENTAL ORGANIZATIONS

BEIJING ENVIRONMENT AND DEVELOPMENT INSTITUTE

Abatement of SO₂ Emissions by Integrating Technological Renovation and Environmental Administration

Focus: Emission Control

Funding: China Foundation for APEC Scientific, Technological, and Industrial Cooperation

Status/Schedule: Initiated 2000, Targeted Completion 2002

This project aims to promote cooperation between Asia Pacific Economic Cooperation forum (APEC) member countries on SO₂ emission control technologies and management practices, and to help China effectively and economically reduce SO₂ emissions through the introduction and development of advanced technical and management methods. It is expected that reduced SO₂ emissions will result in significant economic savings through less physical damage and improved human health. The use of market-based instruments to manage emissions will reduce control costs.

Benxi Cleaner Production Air Pollution Control

Focus: Emissions Control

Funding: United Nations Development Programme (UNDP)

Status/Schedule: Initiated November 1999, Targeted Completion July 2000

UNDP assisted the city of Benxi in a three-year project designed to encourage the use of cleaner production and other innovative ideas including market-based instruments to control local excessive air emissions. Beijing Environment and Development Institute (BEDI) is contracted by UNDP to: 1) review the documents already prepared by subcontractors; 2) supplement data collected by subcontractors; 3) summarize and document the material in both English and Chinese; and 4) assist local project agencies in presenting findings and results in a final project workshop.

Self Assessment of China Council for International Co-operation on Environment and Development

Focus: Capacity Building

Funding: Canadian International Development Agency

Status/Schedule: Initiated January 2000, Completed August 2000

China Council for International Co-operation on Environment and Development (CCICED) is a high-level nongovernmental consulting organisation co-sponsored by the Chinese and Canadian governments to provide policy recommendations to the Chinese government regarding sustainable development in China. The CCICED and the Canadian government entrusted BEDI to assess the projects conducted by CCICED over the past eight years. Based on the information collected by surveys, focus group meetings, and interviews, a report will be generated to analyse the success and experiences of international co-operation in environmental protection.

Total Emissions Control and Emission Trading Pilot Study in China

Partners: Environmental Defense, State Environmental Protection Administration (SEPA), Benxi and Nantong Municipal Environmental Protection Bureaus

Focus: Emissions Control

Funding: Environmental Defense

Status/Schedule: Initiated 1997, Targeted Completion 2001

The aim of this project is to develop strategies for implementing China's total emissions control policy. It is the goal of the Chinese State Council to control the emissions of some pollutants by 2000 at their 1995 levels, and to achieve further reduction within the 2001-2005 timeframe. BEDI has been working closely with the Planning and Finance Department of SEPA to examine implementation policy alternatives to help SEPA achieve this goal, with emphasis on the application of market-based solutions. Phase I of the project is focused on understanding the present state and identifying the main obstacles of implementing China's total emissions control policy. The work of this phase is completed and summarized in a newly published book titled *Total Emission Control and Tradable Emission Rights* (Ma Zhong and Du Dande [Daniel Dudek]. 1999. *Zongliang Kongzhi yu Paiwuquan Jiaoyi*. Beijing:Zhongguo Huanjing Kexue Chubanshe.), which is the first book of its kind in China. Phase II is focused on the development of solutions to the implementation problems identified in Phase I. Two pilot cities have been selected as case studies for emissions trading system. The two cities are 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 the next phase, BEDI is planning to extend its experience to one of the "super cities" or an industrial sector to test the effectiveness of previous work and to start testing the feasibility of implementation at the national level.

BEIJING ENERGY EFFICIENCY CENTER

<http://www.beconchina.org>

Barrier Removal for Efficient Lighting Products and Systems in China

Partners: UNDP, Global Environmental Facility (GEF), State Economic and Trade Commission (SETC), Chinese Ministry of Finance (MoF)

Focus: Energy Efficiency, Capacity Building

Funding: \$8.14 million GEF Grant

Status/Schedule: Initiated April 2001

This project for efficiency lighting products and systems in China aims to address identified market barriers to wide spread use of energy efficient lighting in China by broadening the China Green Lights start-up efforts. Beijing Energy Efficiency Center (BECon) is a technical assistance provider in this project. The overall objective is to save energy and to protect the environment by reducing lighting energy use in China in 2010 by ten percent relative to a constant efficiency scenario. The specific objectives include upgrading of Chinese lighting products, increased consumer awareness of, and comfort with, efficient lighting products, and the establishment of a vibrant, self-sustaining market in efficient lighting products and services.

China Energy and Carbon Scenarios Project

Partners: State Development and Planning Commission (SDPC), Lawrence Berkeley National Laboratory (LBNL)

Focus: Energy Policy

Funding: Energy Foundation, Shell Foundation

Status/Schedule: Initiated April 1999, Targeted Completion March 2002

The main purpose of this project is to provide the SDPC with suggestions for formulating China's Tenth Five-year Plan (2001-2005) and Medium- to Long-Term Strategy for Energy Efficiency. These will include recommendations for policies and actions

that promote sustainable and low carbon development. In April 2000, a Chinese team went to LBNL to undertake a four-week model training and to learn more about the methods of scenario analysis. Under this project, BECon held an international workshop on the social/economic/energy development and carbon emission scenarios May 25-27, 2000. More than 60 international and domestic experts were invited for discussions of what are likely to be the main factors to influence the social economy and energy development in China's future. The Chinese team has already completed industrial sector evaluation reports and submitted them to SDPC. The initial results of economy/energy scenario analysis, run by the model, will be finished at the end of 2001.

China Motor System Energy Conservation Program

Partners: SDPC, Energy Foundation

Focus: Energy Management

Funding: Energy Foundation

Status/Schedule: Initiated August 2000

This program aims to evaluate the current status of the motor system in China, its efficiency (including production, operation design standards, maintenance, and policy), and the potential for improvement. BECon has already completed preparation work for this program. Together with China Energy Conservation Investment Cooperation and LBNL, BECon will apply to the UN Foundation to carry out the findings from the preparation work—including the reform of the motor system economy operation, training, information service, and pilot projects.

Electric Power Conservation Incentive Mechanism and Policy Research in China

Partners: Energy Foundation, Power Economic Research Center of the State Power Corporation

Focus: Energy Policy

Funding: Energy Foundation

Status/Schedule: Initiated December 2000

This project focuses mainly on demand-side management (DSM) policy research. The project will put forward suitable and practical power saving incentive policy proposals for various government institutions in China. This project also aims to stimulate electric power end-users to participate in DSM plans, and to promote adoption of integrated resource planning and DSM techniques.

Energy Efficiency Improvement Incentive Policy Study in China's Power Industry

Partners: Development Research Center of State Council, Energy Foundation

Focus: Energy Efficiency

Funding: Energy Foundation

Status/Schedule: Initiated August 2000

This program is a sub-project of the China Power System Reform and Sustainable Development Strategy Research project funded by the Energy Foundation. Development Research Center of State Council is acting as the leader of this program. BECon does research on energy efficiency improvement methods as they relate to electric power system reforms. The preliminary report has been completed and a detailed study is underway.

Strategic Partnership: Energy Efficiency Programme in China

Partners: SDPC, Development Planning Council, MoF, UNDP, GEF

Focus: Energy Policy

Funding: SDPC, MoF, UNDP, GEF

Status/Schedule: Initiated August 2000

The Programme will provide a framework for coordinating the many energy efficiency initiatives and set out priorities for future initiatives. Many of these initiatives will be eligible to receive incremental GEF funding. The framework may also cover domestically-funded projects, projects funded by other donors, and possibly private sector initiatives. Within this framework, GEF-funded projects may benefit from streamlined approval procedures. Initiatives in the framework will include both those that target specific market sectors and those that are cross-sectoral.

World Bank/Global Environmental Facility China Energy Conservation Promotion Project

Partners: State Economic and Trade Commission (SETC), World Bank, GEF

Focus: Energy Management

Funding: GEF funds

Status/Schedule: Initiated 2000

During the first phase of this project three energy management centers (EMC) have implemented more than 140 energy saving projects with total investment of over 230 million Chinese Yuan. Now BECon and its partners will start to prepare the second phase of this project. In this second phase BECon will work to disseminate this new EMC company concept nationwide. The project will use GEF fund to set up a financing guarantee company. This company will provide the guarantee for energy management center companies when they need the capital to conduct energy saving project. China Energy Conservation Information Dissemination Center of SETC has published 14 Best Practice Case Studies and four Technical Guides nationwide based on this project's research.

CENTER FOR BIODIVERSITY AND INDIGENOUS KNOWLEDGE

<http://cbik.org>

Community-Based Extension of Rattan Project.

Focus: Biodiversity

Funding: The Ford Foundation, local government

Status/Schedule: Initiated 1998

This project's goal is to help promote the local rattan industry by strengthening farmers' capacity in rattan nursery development, introducing new rattan species, and developing field manuals based on indigenous knowledge and innovations. This project will also help to transfer indigenous knowledge to various ethnic communities and forest extension agencies in Xishuangbanna. So far, three rattan nurseries have been established by Hani farmers in Mengsong and two are managed by forestry agencies in Jinghong. More than 10,000 seedlings were produced for distribution to local farmers in 1999 and five rattan species of improved quality were introduced to Xishuangbanna in 2000.

Eco-Tourism and Eco-Cultural Tourism Project

Focus: Eco-Tourism

Funding: Pending

Status/Schedule: Initiated 2001, Targeted Completion 2006

This projects will have two main components: 1) the Vernacular Geo-Architecture and Eco-Cultural Tourism Project; and 2) the Action Planning for Vernacular Geo-Architecture and Bio-Cultural Conservation. Focal places for establishing site conservatories will be selected by the Center for Biodiversity and Indigenous Knowledge (CBIK) and together with villagers, for studying different dimensions of vernacular geo-architectural heritage, and experimenting 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 will also implement effective regulations of developing eco-cultural villages, and work to raise the awareness of conservation and geo-architecture heritage.

Indigenous Innovations and Alternatives to Swidden-Fallow Agroforestry Systems in Xishuangbanna

Focus: Agriculture Research

Funding: The Ford Foundation

Status/Schedule: Initiated 1996, Targeted Completion 2001

This project has successfully supported indigenous innovations and alternatives to swidden agriculture. The focus has been on Jinuo and Hani ethnic minority communities through on-farm experiments in six areas: 1) ecologically improved fallow by introducing nitrogen-fixing legumes; 2) economically improved fallow by introducing bamboo, rattan, and fruit trees; 3) home garden development by introducing wild vegetables; 4) non-timber forest products in the forestlands and traditional jungle tea garden; 5) livestock development by providing pigsties; and 6) training and capacity building for practical technology such as grafting fruit trees. In addition CBIK has established bio-gas tanks in several households in Longpa Jinuo village and energy saving stoves have been introduced to Hongqi village of Mengsong. Through public meetings run by CBIK, the Hani customary laws and regulations for governing the access to wild rattan resources in the 'sangpabawa' (protected rattan forest) were reinforced and renewed.

Logging Ban Impact Assessment Project

Partners: Yunnan Academy of Social Sciences, The Department of Forestry (Yunnan)

Focus: Conservation Research

Funding: Ford Foundation

Status/Schedule: Initiated 1999, Completed 2000

In October of 1998, the Chinese central government instituted a logging ban in southwest China. This project established seven multidisciplinary research teams comprised of government officials from different administrative levels and researchers with expertise in various fields, to assess the direct and indirect impacts of the logging ban on local livelihoods. The assessment consisted of participatory research approaches. The follow-up activities of this project are included in the Rangeland Management Project described below.

Northwest Yunnan Great Rivers Conservation and Development Project

Partners: The Department of Ethnobotany of the Kunming Institute of Botany, International Center for Integrated Mountain Development

Focus: Conservation Research

Funding: The Nature Conservancy

Status/Schedule: Initiated 1999, Ongoing

The project goal is to analyze the impact of human activities on biodiversity conservation in northwest Yunnan. Seven case studies have been selected to investigate and document indigenous natural resources usage, practices of collecting and processing resources, customary institutions of access to nature resources, relevant cultural and socioeconomic values, and the impact of government policies, market forces, and changes in cultural values on biodiversity maintenance.

Rangeland Management Project

Partners: International Center for Integrated Mountain Development

Focus: Agriculture Management

Funding: Pending

Status/Schedule: Initiated 2001, Ongoing

CBIK will use participatory technology development to improve the livelihoods of highland farmers in Northwest Yunnan and to develop locally adapted technologies for the sustainable management of rangelands. Four pilot sites have been selected in Tibetan, Lisu, Nu, and Yi villages, where experiments will be conducted using indigenous knowledge, innovations, and practices.

Small Grants Project for Conserving Nature and Culture

Focus: Capacity Building

Funding: Ford Foundation

Status/Schedule: Initiated 1998, Completed in 2000

The project strengthened the research capacity of young professionals in the fields of conservation and sustainable development in Yunnan, Guizhou, and Sichuan provinces. This Ford Foundation supported effort brought together a group of young researchers to generate new strategies and approaches for promoting sustainable development in upland ethnic minority areas, Southwest China. This CBIK project provided small grants to 27 young researchers from Yunnan, Guizhou, and Sichuan provinces to go back to their own communities and document the local resource management systems. Before their fieldwork research, CBIK trained these researchers in social science subjects, participatory action research methods, research proposal, and report writing skills.

Watershed Management Project

Focus: Water Management, Water Research

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

Status/Schedule: Initiated 2001

This project includes two components: the Watershed Dynamics Project, and the Watershed Governance Project. The goal of the former is to understand societal and ecological dynamics in the Mekong Basin and its secondary watersheds, which will help to establish a Geographic Information System (GIS) database. GIS will be used to analyze local ecological strategies for livelihoods reacting to environmental stresses and socioeconomic constraints, and to assess state and customary governance systems of access to and management of natural resources. GIS will also be used to generate guidelines for policies and resource management. The latter project will focus more on assessing the impacts of institutional and policy changes on upland watershed management in order to improve the effectiveness.

CENTER FOR COMMUNITY DEVELOPMENT STUDIES

Forest Land Tenure and Sustainable Forestry Management*Partners:* Guizhou University, Sichuan Academy of Social Sciences*Focus:* Land Management*Funding:* Rockefeller Brothers Fund, \$50,000*Status/Schedule:* Initiated 2000, Targeted Completion 2002

In order to promote sustainable forests management in southwest China, this project will conduct case studies and study indigenous knowledge of local communities, including forest resource management practices, and their relationship to forest land tenure. The project will also provide support for local communities by participatory land-use planning approach.

Forest Resource Conflict Management in Southwest China

Partners: Sichuan—Natural Resources Conservation and Development Training Center, Forestry Department, Academy of Social Sciences; Yunnan—Southwest Forestry College, Forestry Department, Yunnan Academy of Social Sciences, Yunnan Academy of Forestry Sciences; Guizhou—Forestry Department, Guizhou University, Guizhou Academy of Social Sciences, Guizhou Academy of Forestry Sciences; and International—Community Forestry Unit, Food and Agriculture Organization, Regional Community Forestry Training Center (Bangkok, Thailand)

Focus: Land Management*Funding:* Ford Foundation, \$400,000*Schedule/Status:* Initiated May 2000, Targeted Completion May 2002

This two-year project aims to identify the primary forest resource conflicts and their associated causes in southwest China by conducting case studies. It is intended to produce, revise, and adapt training approaches and materials to improve the analysis and implementation of conflict management activities in rural development and forest resource management. The project also aims to strengthen the capacity of institutions (both governmental and community level) to develop and implement conflict management activities, techniques, and strategies, which will lead to equitable utilization and sharing of the forest resources by the two parties. During the three-year project, two sets of training materials will be developed for local communities and policymakers, respectively.

CHINA ENVIRONMENT AND SUSTAINABLE DEVELOPMENT REFERENCE AND RESEARCH CENTER

<http://www.chinaeol.com/info/main.htm> (Chinese)

<http://www.eetpc.org> (English)

Public Environmental Information, Research, and Education Center*Partners:* Environment Education Television Project for China (EETPC/TVE)*Focus:* Environmental Education

Funding: 100,000 RMB per year from SEPA, additional funds from organizations and companies such as township village enterprises, German Technical Cooperation (including Center for International Development and Migration, 5000DM per year), Japanese International Cooperation Agency, Nissho, Japanese Embassy, Earthscan Publishing House, World Wildlife Fund (WWF), Fridjof Nansen Institute, United Nations Environment Programme (UNEP) and others. 35,000 US\$ from Mitsubishi Foundation in summer 2000

Status/Schedule: Initiated March 1998, Ongoing

The China Environment and Sustainable Development Reference and Research Center (the Center) was opened in March 1998 as part of the Center for Environmental Education and Communication (CEEC) of SEPA. The Center's mission is to make environmental knowledge accessible to the general public by providing resources, sharing knowledge, and building international networks. Open to public use, the Center gives access to up-to-date information on environment through a wide range of research services, and various media such as electronic data, videos, journals, and books (7000 volumes in Chinese and English). They also provide scientific support for the "Living Water Park project for Beijing" coordinating with an international NGO "Keepers of Waters." Training workshops on environmental education (with a German trainer), and language courses (environmental English, environmental Japanese) are organized periodically.

CHINA GREEN STUDENTS FORUM
<http://www.greenchina.org>

Consulting and Training Center for Students' Environment Groups

Partners: Friends of the Earth (Hong Kong), Pacific Environmental Resources Center

Focus: Environmental Education

Funding: Friends of the Earth (Hong Kong), Global Greengrants Fund, and Pacific Environmental Resources Center

Status/Schedule: Initiated 2000, Ongoing

The Center is designed to provide student environment groups with systematic resources on environmental studies, to help them to improve self-capacity and management, and to promote the development of new environmental NGOs in current China. The Beijing office was established in 1999 it is run by project coordinators and core members of the Student Forum.

Green Bookshelf

Focus: Environmental Education

Funding: Global Greengrants Fund

Status/Schedule: Initiated and Completed 2000

This project united ten college student green groups in Beijing to collect environmental books and set up environmental resources centers on their campuses, where students and young environmentalists can find adequate reading and researching materials.

Green Camp

Partners: Professor Tang Xiyang

Focus: Environmental Education

Funding: In-kind from Student Forum members and University Professors

Status/Schedule: Initiated in 1997, Held Annually

The purpose of the Green Camp is to encourage college students to learn about environmental problems and actually participate in field surveys. Professor Tang Xiyang, one of the first environmental activists in China, helped start the first Camp.

Green Seed

Partners: SEPA Center for Environmental Education and Communication

Focus: Environmental Education

Funding: Shell Better Environment Scheme

Status/Schedule: Initiated 2000, Ongoing

The Green Seed project, which is sponsored by the Center for Environmental Education and Communication of SEPA, promotes environmental education in elementary schools nationwide. For this project, the Green Student Forum has been conducting training courses for college students to master basic practical skills to enable them to better teach environmental education classes that are part of the Green Seed project. These training courses include topics such as "How to communicate with children," "How to collect materials for environment lectures."

CIVIC EXCHANGE

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

Civic Exchange for the Environment

Partners: Design School, Polytechnic University of Hong Kong

Focus: Environmental Education

Funding: Private Donors

Status/Schedule: Phase I completed, Phase II initiated February 2001, Phase III initiated March 2001, Targeted Completion May 2001

While there are many good Web sites providing information on the environment, these sites do not always include specific information on Hong Kong's unique environmental concerns. What is also missing are links to environmental sites that help in the public's decision-making process. This project aims to create a Pilot Environmental Site on the Internet to demonstrate how

to help the public to understand environmental issues more thoroughly. If the format is found to be successful, it could be expanded. Phase II started when comments were gathered from schools and the public. Phase III will focus on improving the site based on user's comments. One of the main goals of the site is to link the public to environmental policymaking and help people become active environmentalists.

Clean Vehicle Strategy for Hong Kong

Partners: Asia Foundation, Environmental Defense

Focus: Energy Management, Energy Research

Funding: Asia Foundation

Status/Schedule: Initiated November 2000, Targeted Completion June 2001

The project will provide a matrix of the pros and cons of available options of introducing cleaner fuels and vehicles to Hong Kong and will assess the technical, financial, and political feasibility of introducing cleaner fuels and vehicles to Hong Kong. A literature review has been completed, and interviews and discussions with vehicle manufacturers, fuel suppliers, government officials, and other stakeholders are ongoing. A multi-stakeholder workshop will be conducted in May 2001.

Cross-Border Environmental Law Research

Partners: Faculty of Law, The University of Hong Kong

Focus: Environmental Policy

Funding: Research Grants Council, Hong Kong

Status/Schedule: Initiated December 2000, Ongoing

This project's goal is to examine the environment legal framework in both Hong Kong and Mainland China in order to illustrate how these two distinct jurisdictions deal with environmental problems, and how it is increasingly urgent that they collaborate. Cross-border legal study between Hong Kong and Mainland China is a relatively new area of study. In view of the geographical proximity and economic integration of Hong Kong and south China, there is a need to understand how cooperation can take place effectively, while respecting the national policy of "one country, two systems." A literature review is ongoing, and a visit to Guangdong Province is scheduled. An initial draft of the project report should be available for consultation with experts in mid-2001.

Improving Water Quality in the Pearl River Delta: Innovative Management and Financing Options

Partners: Thames Water (UK), APCO, Center for Coastal & Atmospheric Research, Hong Kong University of Science & Technology, Worcester Polytechnic Institute (USA)

Focus: Water

Status/Schedule: Initiated January 2001, Targeted Completion June 2001

Without better management of the watershed and the provision of substantial funding to build water and wastewater infrastructure in the Pearl River Delta, both Hong Kong's and Guangdong's development will be threatened. This project will examine water pollution in the Delta area and will propose innovative watershed management options, as well as explore potential financial needs to build water and wastewater treatment facilities.

ENVIRONMENTAL VOLUNTEER ASSOCIATION OF SICHUAN UNIVERSITY

<http://www.greensos.org>

Environmental Awareness Activities and Projects

Partners: Various environmental NGOs, student organizations, and local governmental agencies

Focus: Environmental Education

Funding: Annual budget donated from Chinese Companies, Universities, and Local Environmental Protection Bureaus

Status/Schedule: Initiated 1995, Ongoing

Since its foundation in 1995, the Environmental Volunteer Association of Sichuan University (EVA-SU) has organized educational activities inside and outside the university to raise students' environmental awareness, to encourage students' participation in environmental protection, and to promote the concept of environmental citizenship among the public. Forms of those education activities include talks, debates, exhibitions, film festivals, tree planting, community surveys, field research, and events in primary schools. Through the efforts of the founders of the EVA-SU, environmental curriculum in Sichuan University has been substantially improved. Current environment courses offered include: Environment and Sustainable Development (compulsory

for all undergraduates), Environmental Course for MBA students, Teacher Training Program (compulsory for environment education graduate students). An Environmental Education Center is currently under construction which will be the first of its kind at a Chinese university. This Center will aim to: 1) coordinate and systemize all of the programs mentioned above; 2) facilitate the development of student environmental groups in China (the Web site www.greensos.org is under design to connect all the student environment group nationwide); 3) develop teaching/learning methods applying information technology tools; 4) strengthen the partnerships between schools, government departments, concerned organizations (nationally and internationally), and various community efforts; and 5) look for international counterparts to promote cross-border communication, research, and projects to involve young people in environmental protection.

FRIENDS OF THE EARTH (Hong Kong)

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

Bless the Yangtze and Yellow Rivers Project

Partners: Qinghai Provincial Government, Qinghai Environmental Protection Bureau

Focus: Biodiversity, Conservation Management

Funding: Private Donations

Status/Schedule: Initiated 1999

This reforestation project within Qinghai province has multiple components. The project aims to: 1) set up a special ecological conservation area; 2) plant trees and drought resistant grass and shrubs to stop erosion; 3) protect a major water catchment; 4) conduct research on biodiversity and glacier ecology; 5) educate Tibetan herders about sustainable herding and grazing practices; and 6) publicize and educate against illegal poaching.

China BELL 2000 Conference

Partners: World Resource Institute, the Centre of Environmental Management, Education and Development Department of Hong Kong Polytechnic University, Center for Environmental Education and Communication of SEPA

Focus: Environmental Education

Funding: The above partners and the following organizations give monetary or in-kind support—Friends of the Earth (Hong Kong), the Hong Kong Polytechnic University, World Bank Institute (Washington DC), the Wharton School at University of Pennsylvania (USA), and National MBA Education Supervisory Committee (Beijing). Corporate sponsors include—The Ford Motor Company, Citigroup, Cathay Pacific Airways Limited, and Dragonair

Status/Schedule: Held November 3-5, 2000

The goal of the conference was to help Chinese business school faculties infuse environment and sustainability issues into courses they teach and to develop recommendations to the national MBA curriculum committee concerning revisions to the standard MBA curriculum. Two conference Web sites provide more detailed information: <http://www.chinaeol.net/bell> and <http://www.cemed.mgt.polyu.edu.hk/>.

Earth Award

Partners: The Chinese Environmental Journalists Association, SEPA

Focus: Environmental Education

Funding: Personal Donations

Status/Schedule: Initiated 1997, Ongoing

This is an annual award presentation held in China to recognize environmental heroes for their tireless efforts to safeguard the threatened environment. Since 1997, approximately 90 environmentalists have been honored for their devotion and commitment to the green movement.

GLOBAL VILLAGE OF BEIJING

<http://www.gvbchina.org>

Ongoing Projects (See CES 3): Agenda 21 and Me, Environmental Media Network, Environmental Newspaper Columns, Environmental 30 Minutes, Green Civilization and China, Recycling Campaign, Time for Environment

Academic Reports

Status/Schedule: Ongoing

Global Village Beijing (GVB) publishes academic reports on subjects related to its work, ranging from environmental problems in China to environmental protection efforts. Completed research reports include: *Chinese Industrialization and Environmental Cost*, *The Function of Mass Media in Environmental Education*, *Globalization of Consumerism Challenges China*, *Women and Environment*, and *NGO Development in China*. The articles are published in newspapers and magazines or presented at academic conferences in China or abroad.

Annual Forum on Journalists and the Environment

Focus: Capacity Building, Environmental Education

Status/Schedule: Initiated 1996, Ongoing

The purpose of the Forum is to educate the media community about the serious condition of China's environment and prompt journalists to pay more attention to public environmental issues. In this way, GVB is given opportunities to spread its environmental message and to obtain the support of both the government and the public.

Book Series

Partners: State Environmental Protection Administration

Focus: Environmental Education

Status/Schedule: Ongoing

The *Citizen's Environmental Guide* teaches people 50 simple, daily ways to protect the environment. The guide provides facts, figures, and interesting explanations accompanied by colorful illustrations. It also serves as a handbook for organizing environmental activities. The *Children's Environmental Guide* features 15 ways to protect the environment that can be easily implemented by children.

China Earth Day 2001

Partners: China Youth Development Foundation, WWF China Program, China NGO Cooperation and Promotion Committee, China Environmental Journalists Association, and the Environmental Development Research Institute

Focus: Energy Policy, Environmental Education

Status/Schedule: April 2001

The goals of China Earth Day 2001 program include: 1) to inform and advocate the use of renewable energy; 2) to increase environmental awareness in China, encourage general public to adopt a green lifestyle, and get involved in environmental decision-making; 3) to create a demand for public participation mechanisms during environment decision-making process; 4) to develop productive relationships between NGOs and governmental agencies; 5) to link Chinese environmental NGOs with each other and create networks for information exchange ideas, and coordination; 6) to provide new opportunities for government organized non-governmental organizations to become more independent from the government; 7) to build relations with the news media to promote coverage of environmental issues; and 8) to encourage the development of more environmental NGOs. To realize these goals, GVB will organize the following activities: renewable energy survey, the Earth Week events, the China NGO forum, the Signature Campaign, Downtown Earth Day Ceremony (Beijing), and broadcasts of Earth Day TV Program.

Green Citizen Action Network

Focus: Capacity Building

Status/Schedule: Ongoing

GVB has organized a volunteer network that provides training programs for green citizens, an expert consultation telephone hotline, newsletters, educational materials, national lecture tours, and Green Citizen Award nominations. Through these services, ordinary citizens have the opportunity to learn about the condition of China's environment and implement their own solutions. There are more than 4,000 network members voluntarily working for GVB.

Green Communities

Partners: Jiangongnanli Community (Xuanwu District, Beijing)

Focus: Environmental Education

Status/Schedule: Initiated 1996, Ongoing

Jiangongnanli community is the first green community experimental site created by GVB in Beijing. By creating a committee

composed of local governmental leaders, community members, and NGO staff, GVB guides residents to manage their environmental affairs. Citizens have learned to mutually monitor the enforcement of environmental regulations and to participate in environmental decision-making within the community. GVB also organizes university student volunteers from university environmental groups to spread the idea of a green community throughout China.

Yanqing Environmental Education Center

Focus: Environmental Education

Status/Schedule: Initiated May 1999, Ongoing

Located near the Badaling Great Wall site 50 kilometers away from downtown Beijing, GVB's Environmental Education Center in Yanqing County features an Exhibition Hall located in a 187-hectare pristine natural area, which includes wetlands, forested lands, cultivated lands, bird habitats, rock formations, and a natural spring. As an NGO-managed conservation site, the goal of GVB's center is to provide environmental education, consultation, and training programs to the public in a natural environment. Most recently, the training center has been used to educate primary and middle school teachers on environmental protection. Future plans include the construction of eco-arts hall and a renewable energy demonstration site.

GREEN EARTH VOLUNTEERS

<http://www.chinagev.org>

Environmental Education Teacher Training

Focus: Environmental Education

Funding: Ford Foundation

Status/Schedule: Initiated 1997, Ongoing

The Environmental Education Teacher Training project trains 20-50 volunteers weekly in the areas of environmental protection, bird watching, and nature awareness.

Journalist Salon

Partners: WWF China Program

Focus: Environmental Education

Status/Schedule: Initiated 2000, Ongoing

This Journalist Salon provides lectures and training twice monthly for Chinese journalists. Guest speakers have covered subjects such as environmental protection, Mongolian desert wasteland issues, sandstorms in Beijing, and sustainable development in Sanxia.

Planting Trees in the Desert

Partners: The Conservancy Association, Hong Kong Environment Centre

Focus: Environmental Education

Funding: Virtual Foundation and The Conservancy Association Hong Kong Environment Centre (Grant)

Status/Schedule: Initiated 1997, Ongoing

In May 1997, 108 Green Earth Volunteers (GEV) planted trees in the desert of En Ge Bei in Mongolia. Between April 1998 and August 2000, about 2000 GEV planted trees and grass in the desert of Ke Er Qin in Mongolia. The volunteers came from Beijing, and included students, reporters, teachers, and professional scientists.

Tree Planting along the Yellow River

Partners: Local Governments in Shanxi Province

Focus: Biodiversity, Conservation Management

Funding: Donations and in-kind support from GEV members

Status/Schedule: Initiated 1999

Each year, between April and May, GEV plant trees along the Yellow River at Ji Xian, in Shanxi. Roughly 1000 Green Earth Volunteers participated last year. As these trees mature, they will play a significant role in reducing erosion along the Yellow River.

SOUTH-NORTH INSTITUTE FOR SUSTAINABLE DEVELOPMENT

<http://www.snisd.org.cn>

Demonstration Project to Commercialize Biogas Technology in Baima Snow Mountain Nature Reserve, Yunnan Province

Partners: The Nature Conservancy

Focus: Energy Management

Funding: Local bank loans, participant contributions, South-North Institute for Sustainable Development (SNISD) grants

Status/Schedule: Initiated 2000, Ongoing

In cooperation with The Nature Conservancy, the Beijing-based SNISD has helped farmers in two villages within the Baima Snow Mountain Nature Reserve construct small-scale biogas generating systems to provide biogas for daily energy use and a winter greenhouse. As a result, the families have greatly reduced their consumption of natural firewood and are now able to grow profitable greenhouse vegetables to supplement the family income. The total investment for the installation of the biogas systems is a combination of family contributions, local bank loans, and subsidies by SNISD. Yunnan province is the second area in China where SNISD is conducting demonstration projects for the four-in-one system to produce biogas. The first successful projects were in Dalian in Northeast China. Both projects have helped bring new ideas of comprehensive utilization of biogas technology to local farmers who are involved in all stages of construction and implementation. Beyond installing the technology, SNISD has conducted several follow-up activities. For example, after constructing the biogas systems, SNISD invited experts and technicians to Baima Snow Mountain Nature Reserve to demonstrate to farmers how to grow vegetables in greenhouses. Local technicians from Yunnan were sent to the Dalian project area for short-term training on maintaining the systems. To spread the knowledge of this technology in the region, SNISD is helping local schools to implement the four-in-one system and turning it into a training center for agriculture technology.

Policy Study and Recommendation on Sustainable Development to China's Decision-Makers

Focus: Environmental Policy

Funding: The W. Alton Jones Foundation

Status/Schedule: Initiated 1999, Completed August 2000

SNISD identified five scholars from different disciplines and well experienced in their respective fields to carry out systematic investigations on a variety of sustainable development topics relevant for China. The topics included:

- *The Changing International Monetary System and China's Choices*. This paper explored the potential financial cooperation between the two sides of the Taiwan Straits after the Asian economic crisis (by Wei Jianing).
- *Strategies of Energy Structural Adjustment to Promote Economic Growth and Environmental Protection* is a case study of electric power industries that explores replacing nuclear power with natural gas and renewable energies" (by Wang Yi).
- *China's Urbanization and Sustainable Development* (by Qian Jingjing).
- *Revolutionary Impact of Development of Fuel Cell Technologies for Power Industry* (by Chen Qing).
- *Vegetation Development and Flood Prevention and Control* (by Bao Xiaobin).

The above research papers aim 1) to provide recommendations to Chinese state leaders and policymaking organizations; 2) to highlight the importance and necessity of supporting renewable energy development to high-level officials, and 3) to assist the Shanghai Municipal Government to include development of fuel cell application in vehicles into its municipal development blueprint.

Promoting Green Electricity in Beijing and Surveying the Potential Consumer Demand for Green Electricity

Focus: Renewable Energy

In order to promote the development of wind power in Inner Mongolia that could provide green electricity and thereby improve the air quality of Beijing, SNISD organized a group of experts to visit wind power sites in Inner Mongolia. One major conclusion drawn at the workshop following this group investigation was that currently it is difficult for individual generators of wind power in Inner Mongolia to obtain a power-purchasing contract. In theory, a green electricity scheme, which covers the incremental financial cost between wind power and coal-based power, could develop a bigger market to utilize the abundant wind resources in Inner Mongolia. The SNISD plans to investigate whether such a scheme, on voluntary basis, currently could be applied in China. A public survey will be conducted among potential consumers of green electricity in Beijing to discover if there exists sufficient interest in such a scheme. If there appears to be public support, the SNISD will propose to the Beijing Municipal Government to set up a green electricity scheme on a pilot basis.

Promoting High Quality and High Yield Rice Cultivation and Integrated Utilization of Biogas in Wa, Myanmar

Partners: Yunnan Agriculture University, Wa Agriculture Technology School

Focus: Renewable Energy

Funding: Toyota Foundation

Status/Schedule: Initiated January 2001, Targeted Completion December 2001

The project is targeted at the Wa Special District in the Northeast Myanmar, an autonomous region within the Shan State. This area borders Thailand, Laos, and China and covers approximately 40,000 square kilometers of mountainous land. The Wa District contains some 600,000 people belonging to 25 ethnic groups. It was reported that 50 percent of illegal drugs sold in North America originated from this region. The Wa authority has realized that the poppy cultivation and opium production are the main causes of poverty and political isolation in the area. Objectives of the project are to start training programs on technology of rice cultivation and integrated utilization of biogas and to promote high quality and yield rice cultivation. A group of Wa villagers and students as future technicians and leaders will be selected as the first trainees in biogas development and rice cultivation. Based on surveys of the local environment, SNISD will design the scope of the training and the curriculum. Following the first group of training, the participants will be asked to critique the training program and give suggestions on revising the curriculum.

PART IV. MULTILATERAL ACTIVITIES

ASIAN DEVELOPMENT BANK

<http://www.adb.org>

Acid Rain Control and Environmental Improvement Project

Partners: Anhui Environmental Protection Bureau

Focus: Air Policy

Funding: \$964,000

Status/Schedule: Initiated 1999, Targeted Completion 2001

The main objective of the proposed technical assistance is to carry out a feasibility study and formulate a project for sulfur dioxide reduction, acid rain control, and environmental improvement in Anhui Province. The scope of the project will cover three main areas: 1) an environmental policy package; 2) a set of sub-projects to reduce sulfur dioxide, to control acid rain, and to improve environment; and 3) an institutional strengthening component.

Efficient Utilization of Agricultural Wastes

Partners: Chinese Ministry of Agriculture

Focus: Agriculture Management, Energy Management

Funding: \$703,000

Status/Schedule: Initiated 1999, Ongoing

The project being carried out in Hubei, Shanxi, Jiangxi and Henan Provinces is based on conclusions from a previous Asian Development Bank (ADB) technical assistance project, the China's Rural Energy Development Study that was completed in 1996. This study recommended an integrated agricultural development approach to improve the livelihood of farm households in rural China. This type of development approach has been an option endorsed by central and local government authorities to mitigate the shortage of energy resources, to improve the environment, to promote the growth of small cities, and to develop and improve the local economy in rural areas. China's environment is degrading as a result of deforestation, communal grazing, excess solid and sanitary waste, and low-intensive farming that has led to increased soil erosion and poverty in the rural areas. In these rural areas, farm households have limited access to modern energy sources due to lack of funds and therefore they put enormous pressure on the forests (for firewood) and excessively use coal for cooking. To help solve the energy shortages, this ADB project aims to increase the energy supply in the project areas, to decrease the consumption of biomass resources in order to protect the natural vegetation to avoid soil erosion, to improve management and disposal of agricultural waste products, and assist the reversal of continued environmental deterioration.

Fujian Soil Conservation and Rural Development II

Partners: Fujian Provincial Government

Focus: Agriculture Management, Land Management

Funding: \$650,000

Status/Schedule: Initiated 1999, Ongoing

The objective of the project is to extend and expand the development activities of the Fujian Soil Conservation and Rural

Development Project. In particular, the sub-projects will evaluate the impact of orchard development, aquaculture, agro-processing, and agricultural market subprojects on poverty alleviation. The project will use this information to identify the major determinants of success and to make recommendations for site and beneficiary selection. Specifically related to project components, technical recommendations for soil conservation, aquaculture, and integrated livestock-orchard development activities will be made, and based upon strong market potential, help identify specific fruits/varieties, and aquaculture and livestock products eligible for funding.

Global Environment Facility Program Approach to Land Degradation

Partners: Chinese Ministry of Finance (MoF)

Focus: Land Policy

Funding: \$100,000

Status/Schedule: Initiated 2000, Ongoing

In this project ADB, will work with MoF in the development of a response system to land degradation and desertification in the arid, semi-arid, and dry sub-humid ecosystems of western China. The overall objective is to formulate a broad policy and strategy framework as the basis for a Global Environment Facility (GEF)/PRC Partnership on Land Degradation in Dryland Ecosystems. Workshops will be conducted with key stakeholders to design these strategies.

Hebei Province Wastewater Treatment

Partners: Hebei Finance Bureau

Focus: Water Management

Funding: \$850,000

Status/Schedule: Initiated 2000, Targeted Completion 2001

Hebei Province is located in the lower reaches of the Hai-Luan River Basin. All the major rivers of the basin flow through the province into Bohai Bay, a key marine and fisheries resource. The province has therefore a critical and central role to play in overall wastewater management of the basin. Due to the untreated wastewater discharged into the rivers and sea, the surface water is heavily polluted. Water quality in most rivers do not meet even Class V (severely polluted) water quality standards. The water quality of Bohai Bay is declining and the annual occurrence of red tide has increased, inflicting considerable damage to ocean fisheries and aquaculture industry. Hebei Province is the source of drinking water not just for its own resident population but also for a significant proportion of those residents in Beijing and Tianjin Municipalities. The objective of the project is to help improve the construction and expansion of wastewater treatment plants and associated wastewater collection facilities in five major cities that impact Bohai Bay—Baoding, Chengde, Qian'an, Tangshan, and Zhangjiakou.

Hohhot and Baotou Urban Development and Waste Management

Partners: Inner Mongolia Autonomous Region

Focus: Urban Development

Funding: \$600,000

Status/Schedule: Initiated 1999, Ongoing

Hohhot and Baotou, the two largest cities of the Inner Mongolia Autonomous Region, are experiencing rapid urbanization which has outpaced the delivery of urban infrastructure and services. Waterways, land, and air in urban areas are heavily polluted by untreated wastewater, improperly disposed solid waste, vehicular emissions, and raw coal burning for heating in winter. This technical assistance project will help formulate a project suitable for ADB financing, which is expected to include wastewater management, expansion of the central heating system, solid waste management, and improvements to roads and traffic management.

National Strategies for Soil and Water Conservation

Partners: Ministry of Water Resources, Department of Soil and Water Conservation

Focus: Water Management, Land Management

Funding: \$800,000

Status/Schedule: Initiated 2000, Ongoing

The objective of the project is to assist the Chinese Ministry of Water Resources in the rehabilitation of degraded and eroded land in an effort to bring additional land resources back into productive use. The project will include a survey of the extent and severity of land degradation throughout China. The project will also assess past soil and water conservation projects. One major goal will be to identify alternative options to accelerate the rehabilitation and protection of land in China.

Optimization of Initiatives to Combat Desertification in Gansu Province

Partners: Gansu Provincial Forestry Department

Focus: Land Management

Funding: \$610,000

Status/Schedule: Initiated 2000, Ongoing

The objective of the project is to assist the Gansu Provincial Government with application efforts to combat desertification. The project will include a review and assessment of the impacts of ongoing programs related to combating desertification in Gansu Province. Policy recommendations, legislative, and institutional changes will be aimed at achieving the optimum environment for combating desertification in Gansu Province.

Pro-Poor Urban Heating Tariff Reform

Partners: Chinese Ministry of Construction

Focus: Energy Management

Funding: \$850,000

Status/Schedule: Initiated 2000, Ongoing

The objective of the project is to help the Chinese government reform the urban heating sector and to promote sustainable urban heating supply in China by formulating pro-poor national heating tariff guidelines, and establishing an effective heating tariff collection mechanism. Special attention will be paid to assessing the economic, environmental, and financial impact of heating tariff reforms.

Songhua River Flood, Wetland, and Biodiversity Management Project I

Partners: Jilin Province, Heilongjiang Province, Inner Mongolia Autonomous Region

Focus: Biodiversity, Water Management

Funding: \$480 million (ADB \$150 million Ordinary Capital Reserve (OCR), Foreign Investment \$130 million, Local Investment \$200 million)

Status/Schedule: Initiated 1999, Ongoing

The objective of the Songhua River Flood, Wetland, and Biodiversity Management Project is to reduce damage caused by floods in the Songhua River Basin and enhance biodiversity conservation in Sanjiang wetlands. As an integral part of biodiversity conservation, this project will assist local communities in implementing sustainable development approaches of natural resources in the Sanjiang wetlands.

Songhua River Flood, Wetland, and Biodiversity Management Project II

Partners: Chinese Ministry of Water Resources

Focus: Water Management

Funding: \$1.55 million

Status/Schedule: Initiated 1999, Ongoing

The objectives of the project are to assist the Chinese government to identify the most appropriate flood protection works to support the government's comprehensive flood management plan for Songhua River basin. The sustainable management and development of biodiversity in Sanjiang Plain, which is an internationally important wetland for water birds and other wildlife, will be one component of the proposed Songhua River Flood Management Project.

Strengthening Urban Solid Waste Management

Partners: Chinese Ministry of Construction

Focus: Urban Development

Funding: \$600,000

Status/Schedule: Initiated 1999, Ongoing

The objective of the project is to assist the Chinese government in improving urban solid waste management through: 1) developing a strategy and framework for institutional reform; 2) formulating a methodology for solid waste tariff administration; and 3) preparing national policies and plans for solid waste management. One major project goal is to increase the level of urban solid waste management services to improve environmental health and urban living conditions. The project also aims to strengthen the responsibility of municipal governments and agencies in delivering full cost recovery urban solid waste management services.

Technical Assistance Cluster for Trans-Jurisdiction Environmental Management

Partners: Chinese State Environment Protection Administration (SEPA)

Focus: Water Management

Funding: \$2.1 million

Status/Schedule: Initiated 2000, Ongoing

The main objective of the project is to assist the Chinese government in operating jurisdictional provisions of the revised Water Pollution Prevention and Control Law of 1996, using the Yellow River Basin as a case study. In doing so, the project will strengthen environmental management in the Yellow River Basin, develop local legislation, rules, and regulations, and examine the need for a national law to integrate various dimensions of river basin environmental management.

Wind Power Development Project I

Partners: Heilongjiang Electric Power Company, State Development Planning Commission, Liaoning Electric Power Corp., Xinjiang Electric Power Company

Focus: Energy Research

Funding: \$6 million

Status/Schedule: Initiated 2000, Ongoing

The project will serve as benchmark for wind-based power generation in Xinjiang Uygur Autonomous Region and Heilongjiang and Liaoning provinces. Through the commercializing of wind-farm companies and the implementation of national policy for renewable energy use at provincial level, capacity-building and training projects will be enhanced in the region. Three provincial power agencies—in Heilongjiang, Liaoning, and Xinjiang—will be the executing agencies for project implementation.

Wind Power Development Project II

Partners: State Power Corporation

Focus: Energy Management

Funding: \$65 million (ADB \$45 million, Local co-financing \$20 million)

Status/Schedule: Initiated 1999, Ongoing

The development and commercialization of grid-connected wind-based electricity in Xinjiang Autonomous Region by expanding existing farms in that region and developing new farms in Liaoning and Heilongjiang provinces will be the project's focus. The scope of the project will include: 1) a review of the Chinese government's strategies and policies for wind energy development; 2) design of an appropriate institutional and financial framework for increased investments in wind-based electricity generation projects; and 3) determination of the technical, economic, and financial feasibility of the project's components.

Wuhan Wastewater Treatment

Partners: Wuhan Construction Administration Commission

Focus: Water Management

Funding: \$600,000

Status/Schedule: Initiated 1999, Ongoing

Wuhan, the provincial capital city of Hubei Province with area of 863 square kilometer and a population of 3.7 million, only treats eight percent of its wastewater. The discharge of untreated wastewater into the rivers and lakes causes serious pollution and adversely affects drinking water quality in the region. This project will include construction and expansion of wastewater treatment plants and associated wastewater collection facilities.

Xinjiang and Gansu Energy Master Plan

Partners: Gansu Provincial Government, Xinjiang Uygur Autonomous Region Provincial Government

Focus: Energy Policy

Funding: \$900,000

Status/Schedule: Initiated 2000, Targeted Completion 2005

The objective of the project is to assist the Gansu provincial government and the government of Xinjiang Uygur Autonomous Region in preparing their long-term energy development plans. The energy development plans will be underpinned by a comprehensive study built around provincial government development priorities, including energy efficiency and environmental considerations.

Yellow River Flood Management Sector Project I

Partners: Chinese Ministry of Water Resources

Focus: Water Management

Funding: \$930,000

Status/Schedule: Initiated 1999, Ongoing

The objectives of the project are to assist the Chinese government in identifying the most appropriate flood protection works in the lower river to support the government's comprehensive flood management plan for the Yellow River, including sound environmental management techniques, and improved flood forecasting, warning, and preparation methods.

Yellow River Flood Management Sector Project II

Partners: Ministry of Water Resources

Focus: Water Management

Funding: \$562 million (ADB \$150 million, foreign investment \$150 million, local investment \$262 million)

Status/Schedule: Initiated 1999, Ongoing

The objective of the Yellow River Flood Management Sector Project is to reduce flooding and damages in the lower Yellow River through improved river management and flood protection measures. The project will improve the environment in the lower river basin and enhance protection of the poor and near poor against flood hazards. The components of the project will include flood management, flood control, and village flood protection and work to improve construction of village infrastructure, social facilities, housing for the poor, and improvement of drainage basins.

Yunnan Comprehensive Agricultural Development

Partners: Yunnan Planning Commission

Focus: Biodiversity, Agriculture Management

Funding: \$1.33 million

Status/Schedule: Initiated 1999, Ongoing

This project will address the Chinese government's goal of sustaining Yunnan's agricultural growth to alleviate rural poverty while conserving the Province's rich biodiversity. The project will have two objectives: 1) to increase production, processing, and marketing of high-value crops using approaches that can generate employment and income opportunities and promote agrobiodiversity; and 2) to designate, establish, and manage a protected areas system in the northwest region to conserve biodiversity.

Yunnan-Simao Forestation and Sustainable Wood Utilization

Partners: Yunnan Planning Commission

Focus: Agricultural Management

Funding: \$1 million

Status/Schedule: Initiated 2000, Ongoing

The proposed project will assist the Yunnan provincial government in achieving a sustainable and viable operation of pulp mills. The Yunnan Planning Commission will finance a team of international experts to operate and maintain pulp mills.

GLOBAL ENVIRONMENTAL FACILITY

<http://www.gefweb.org>

Biodiversity Management in the Coastal Area of China's South Sea

Partners: United Nations Development Programme (UNDP)

Focus: Biodiversity

Funding: Pending

Status/Schedule: Approved April 2000, currently in planning stage

This project aims to protect globally significant marine and coastal biodiversity along China's sub-tropical and tropical southeast.

Capacity Building for the Rapid Commercialization of Renewable Energy—China

Partners: UNDP

Focus: Emission Control

Funding: GEF \$8.83 million, Outside financing \$18.84 million

Status/Schedule: Approved April 1997, First annual progress report submitted May 2000

The objective of the project is to reduce CO₂ emissions by limiting reliance on fossil fuels with the development of renewable energy technologies.

Efficient Industrial Boilers—China

Partners: World Bank

Focus: Emission Control

Funding: GEF \$32.81 million, Outside financing \$68.57 million

Status/Schedule: Targeted Completion June 2001

This project will reduce greenhouse gas emissions by adapting foreign energy technologies for small- and medium-sized coal-fired industrial boilers. To assist the dissemination and effective use of efficient technologies, the project will also strengthen China's industrial-boiler engineering operations, production management and marketing capabilities, and improve boiler technology exchange domestically.

Enabling China to Prepare Initial National Communication to the United Nations Framework Convention on Climate Change — China

Partners: United Nations Development Programme

Focus: Emission Control

Funding: GEF \$3.6 million, Outside financing \$240,000

Status/Schedule: Approved May 2000, Ongoing

The principal aim of the project is to enable China to comply with obligations related to Article 4.1 and other relevant commitments, specified in the United Nations Framework Convention on Climate Change (UNFCCC). The aims of the project are therefore to generate, analyze and communicate information relevant to the completion of a national greenhouse gas inventory, vulnerability assessment, and adaptation option analysis.

Energy Conservation II—China

Partners: World Bank

Focus: Energy Management

Funding: Pending

Status/Schedule: Approved June 2000, Currently in planning stage

The objective of the proposed Energy Conservation Phase II project is to achieve exceptionally cost-effective improvements in energy efficiency and associated reductions in the growth of carbon dioxide emissions through the development and operation of a wider range of new Energy Management Centers in China.

Energy Conservation and Greenhouse Gas Emission Reduction in Chinese Township and Village Enterprises II

Partners: UNDP

Focus: Emission Control

Funding: GEF \$9 million, Outside financing \$10.55 million

Status/Schedule: Targeted Completion June 2003

This project will seek to reduce greenhouse gas emissions in China from the township village enterprises sector by increasing utilization of energy-efficient technologies and products in the brick, cement, metal casting, and cooking sectors. The project aims to remove key market, regulatory, technological, management and commercial barriers to the production, marketing, and utilization of energy-efficient technologies and products in these industries.

Nature Reserves Management—China

Partners: World Bank

Focus: Biodiversity

Funding: GEF \$17.8 million, Outside financing \$5.7 million

Status/Schedule: Targeted Completion June 2002

The project will prepare and implement management plans in five priority protected areas. Staff training, physical investment, and collaboration with communities adjacent to and within project area boundaries will be the projects primary focus. A second component will restructure a major timber industry in Changqing to promote sustainable forestry and to create a core protected area of giant panda habitat, surrounded by a limited-use production/buffer zone.

Promoting Methane Recovery and Utilization from Mixed Municipal Waste—China

Partners: UNDP

Focus: Emission Control

Funding: GEF \$5.29 million, Outside financing \$14.28 million

Status/Schedule: Targeted Completion May 2001

The project's long-term objectives are to promote wide spread adoption of landfill gas recovery technology based on technical and organizational experience gained from the three pilot landfills proposed in this project. Specifically, these include the significant reduction of emissions of methane, reduction in air, water and land pollution associated with refuse dumping and the promotion of indigenous enterprises that will build and operate recovery systems.

Renewable Energy Development—China

Partners: World Bank

Focus: Emission Control

Funding: GEF \$35.73 million, Outside financing \$372.27 million

Status/Schedule: Targeted Completion April 2002

The project will attempt to reduce China's heavy reliance on coal and resulting local, regional, and global environmental damage, and to supply electricity to rural households and institutions that otherwise would not have access to modern energy. Technical support will be provided to aid in the installation of clean energy technologies, such as wind farms, photovoltaic, and solar/wind hybrid systems. Project investments are expected to result in declines in technology costs and reductions of about 13 million tons of carbon emissions per year.

Second Beijing Environment Project

Partners: World Bank

Focus: Emission Control, Urban Development

Funding: GEF \$25 million, Outside financing \$437 million

Status/Schedule: Approved December 1999, Ongoing

The project will improve the quality of life for the citizens of Beijing by alleviating the city's acute air and water pollution problems. In addition, technical assistance will help reduce China's greenhouse gas emissions. The project will operate with three primary objectives: energy conversion and efficiency; wastewater treatment; and environmental capacity building.

Ship Waste Disposal – China

Partners: World Bank

Focus: Water Management

Funding: GEF \$30 million; Outside financing \$34.8

Status/Schedule: Targeted Completion June 2003

Project implementation has been satisfactory. Ship waste reception facilities at the six ports have been substantially completed. Laboratory equipment and training of environmental staff at the six ports has improved monitoring capability. The project has developed a Ship Waste Tracking System and the second phase training program for ports and Ministry of Commerce (MoC) staff took place in May 1997. The Guidelines for Generic Oil Spill Contingency Plan (prepared for the six ports) is in the process of being given official status and applied to all Chinese ports; to promote dissemination of the new guidelines, MoC implemented an oil spill contingency drill at Ningbo Port, attended by nation-wide authorities and harbor superintendents.

Sichuan Gas Transmission and Distribution Rehabilitation

Partners: World Bank

Focus: Emission Control

Funding: GEF \$10 million, Outside financing \$112.7 million

Status/Schedule: Targeted Completion June 2001

This project will work to rehabilitate gas transmission and distribution systems to eliminate methane gas losses and improve pipeline network performance. Main components will focus on safety and operational efficiency of transmission and distribution systems, and selection of cost-effective measures to reduce gas leaks through a program of environmental upgrades.

Songhua River Flood and Wetland Management Project – China

Partners: ADB

Focus: Wetland Management

Status/Schedule: Approved September 1999, Currently in planning stage

The project aims to enhance flood mitigation of the Songhua wetlands and to aid in conservation of the globally unique environment along the Sanjiang plain.

Strategic Partnership to Support Government of China Renewable Energy Program

Partners: World Bank

Focus: Emission Control

Status/Schedule: Approved January 2000, Currently in planning stage

This partnership program aims to support the Government of China (GOC) Renewable Energy Program to be represented in the 10th and 11th Five Year Plans. The objective would be taken from the GOC Program: to reduce environmental emissions from coal fired power generation by developing sustainable commercial markets for electricity from renewable energy.

Wind Power Development—China

Partners: ADB

Focus: Emission Control

Status/Schedule: Initiated September 1999, Currently in planning stage

The project will attempt to provide an initial outline of additional activities needed to promote wind power market development in three Chinese Provinces.

UNITED NATIONS FOUNDATION

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China Motor System Energy Conservation Program

Partners: United Nations Industrial Development Organization (UNIDO)

Focus: Energy Management

Funding: \$1.52 million

Status/Schedule: Initiated March 2000, Targeted Completion 2003

Electric motor systems are widely used in China to power fans, pumps, blowers, air compressors, conveyers, machinery, and many other types of equipment. Overall, electric motor systems account for more than 50 percent of China's electricity use. Major opportunities exist to improve the efficiency of these systems, including optimizing design and improving operations and maintenance practices. This project seeks to improve the efficiency of electric motor systems in China, with a focus on Shanghai and Shandong provinces. UN Foundation (UNF) funding will support the UNIDO efforts to pilot an efficient motors initiative that will promote improvements in motor designs and operating practices.

Demonstrating Modernized Biomass Energy in China

Partners: UNDP

Focus: Energy Research

Funding: \$1.24 million

Status/Schedule: Initiated January 1999, Targeted Completion 2002

UNF is providing funding to support this UNDP-led demonstration project in Jilin Province in northeast China. The project will provide funding for the construction of a state-of-the-art village biopower system, which will be commercially operated to ensure that community needs are identified and addressed, and eventually solve the paradox of excess agricultural residues and inadequate rural energy.

Developing Financial Intermediation Mechanisms for Energy Efficiency Projects in Brazil, China, and India

Partners: The World Bank

Focus: Energy Efficiency

Funding: \$100,000

Status/Schedule: Initiated November 2000, Ongoing

Although studies have shown that the potential for greenhouse gas (GHG) reduction from energy efficiency projects in Brazil, China, and India—three of the largest GHG emitting developing countries—is significant, a number of financial barriers has inhibited large-scale commercial investment in energy efficiency projects in the three countries. A critical barrier identified in all three countries is the difficulty in obtaining low-interest financing for large-scale commercial investment, and specifically, energy efficiency projects. The objective of this planning grant is to reduce greenhouse gas emissions by catalyzing a substantial increase

in energy efficiency investments in developing countries, specifically from domestic commercial financial institutions.

G77/China Workshops on Building and Negotiating Capacity

Partners: United Nations Institute for Training and Research

Focus: Capacity Building

Funding: \$263,655 over 6 months

Status/Schedule: Initiated November 1999, Ongoing

This project will support efforts by the United Nations Institute for Training and Research to assist the Group of 77 and China coalition in building capacity to participate more effectively in negotiations on issues of sustainable development. Various negotiations and dialogues are underway in the international community addressing a wide array of complex scientific, economic, and other issues. Lacking sufficient capacity and technical expertise in these areas, developing countries often must use extensive time at negotiations to better understand the issues. This project will provide technical training to help enhance the capacity of developing nations to participate in various negotiations.

Promotion of Commercialization of Village-Scale Renewable Energy Services in Remote Areas of China

Partners: United Nation's Department of Economic and Social Affairs (UNDESA)

Focus: Renewable Energy

Funding: \$75,000

Status/Schedule: Initiated November 2000, Ongoing

Some 80 million people in China, most living in remote and poor areas of the country, lack access to electricity. Power provided by conventional fossil-fuel-based energy sources—extending the existing electric grids or importing diesel fuels—are usually not the most cost-effective approaches and will increase carbon dioxide emissions, thus causing irreversible damage to the global climate. This planning grant aims to support Chinese government efforts to meet rural energy needs by creating sustainable renewable energy enterprises, and demonstrating sustainable business and financing models for off-grid renewable energy development linked to productive use and income generating activities.

Supporting Post-Kyoto Climate Change Policies in China

Partners: UNDP, World Resources Institute (WRI)

Focus: Emission Control

Funding: \$900,000 over 1 year with \$110,000 match from W. Alton Jones Foundation

Status/Schedule: Initiated May 1998, Ongoing

China is currently the second leading emitter of greenhouse gases in the world. With its crucial role in preventing harmful global climate change, China's responsibility for providing clean, safe, and efficient energy for its own development is enormous. One of China's key challenges for the next century is to develop a sustainable energy strategy that meets national development goals without sacrificing environmental protection both at home and abroad. This pilot project is designed to identify, support, and increase the availability of information about Chinese domestic policies that promote national development goals while also reducing emissions. It will support national and international processes within China that identify and consolidate relevant information.

WORLD BANK

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Beijing Environmental Project

Partners: Beijing Municipal Government

Focus: Air Management, Water Management

Funding: \$349 million

Status/Schedule: Initiated 2000, Targeted Completion 2006

The Second Beijing Environment Project aims to alleviate air and water pollution in Beijing. The project components will include the conversion of medium-sized heating boilers from coal to natural gas, the establishment of technical and institutional expertise to encourage sustained market-based energy conservation, complete renovation of existing monitoring stations, and the construction of a Liangshui River System Wastewater Treatment. In addition, a sewer system will be constructed along the Qing River.

China Industrial Pollution Projection System

Partners: SEPA, Chinese Academy of Environmental Sciences, Nanjing University, Zhenjiang Environmental Protection Bureau, Hohhot Environmental Sciences Institute

Focus: Environmental Management

Funding: World Bank's Information Development Program

Status/Schedule: Initiated 1998, Publications Printed 2001

New information-intensive techniques offer agencies the opportunity to do high-level planning and prioritization that can greatly enhance their cost-effectiveness. This project focuses on one such approach, targeting at the more than 500 environmental protection agencies in China. The project will develop an industrial pollution projection system for China (CIPPS) which will allow agencies to estimate local industrial pollution loads, the damages caused by pollution, and the cost of pollution abatement. CIPPS will enable agencies to assess the benefits and costs of alternative regulatory scenarios, thereby generating higher returns from their limited budgets. Along with working reports, a Chinese book entitled "Theory and Practice on Information Disclosure" will be published at the conclusion of the project. At the NIPR Web site: <http://www.worldbank.org/nipr/polmod.htm>, the CIPPS coefficients, research papers and guidance manual can be found.

Chongqing Urban Environment Project

Partners: Chongqing Municipal Government

Focus: Urban Development

Funding: \$200 million

Status/Schedule: Initiated 2000, Targeted Completion 2006

The Chongqing Urban Environment Project aims to provide a safe environmental setting for the sustainable long-term economic growth of urban areas in Chongqing Municipality. Through the development of management technologies and strategies, the project will improve standards for solid waste and wastewater collection and treatment, and extension of existing wastewater treatment facilities. In addition, the project will also finance an immediate plan for infrastructure rehabilitation and promotion of conservation, heritage, and tourism.

The Energy Conservation Project

Partners: State Economic Trade Commission

Focus: Energy Management

Funding: \$63 million

Status/Schedule: Initiated 1998, Targeted Completion 2006

This project will support the introduction of a market-based approach to financing energy conservation investments and energy performing contracting. Secondly, the project will support the introduction of a new energy information program, providing consumers with information on financially attractive energy conservation investments. The project components include energy management and company modeling, information dissemination, and program management and monitoring analysis.

Forestry Development in Poor Areas Project

Partners: Ministry of Forestry

Focus: Land Management

Funding: \$200 million

Status/Schedule: Initiated 1998, Targeted Completion 2006

The objective of this forestry project is to develop forest resources in poor areas of central and western China on a sustainable and participatory basis to support poverty reduction, forestry development, and improved environmental management. The project components include the establishment of timber plantations and economic forest crops, including bamboo, fruit, nut, and medicinal trees. The project will be carried out via development, training, and monitoring support, administered by the project's governing agency.

Guangxi Urban Environment Project

Partners: Nanning and Guilin Municipal Governments

Focus: Environmental Management

Funding: \$92 million

Status/Schedule: Initiated 1998, Targeted Completion 2004

By supporting sustainable economic growth and poverty alleviation in the region, the environmental protection service capacities

and management frameworks in Nanning and Guilin cities will be greatly improved. The project has six components, including sewerage and drainage, the sewerage and solid waste management, sewage treatment, fresh water reservoir improvements, industrial development, and introduction of environmentally friendly, micro-business solutions.

Loess Plateau Watershed Rehabilitation Project

Partners: Ministry of Water Resources

Focus: Water Management

Funding: \$150 million

Status/Schedule: Initiated 1999, Targeted Completion 2004

The development objective of this second Loess Plateau watershed Project is to contribute to the sustainable development of the Loess Plateau. The project's focus will be on increasing agricultural production and incomes, as well as on improving the ecological conditions in tributary watersheds of the Yellow River. The main components of the project include cropland improvement, sediment and flooding control, and advancement of irrigation practices. Secondary components, like slope-land protection, will increase the vegetation cover, and improve the erosion control capacity in project watersheds.

Understanding and Improving the Environmental Performance of China's Township-Village Industrial Enterprises.

Partners: SEPA, Nanjing University, Beijing Normal University, and the Zhenjiang, Guizhou, and Tianjin Municipal Environmental Protection Bureaus

Focus: Environmental Policy

Status/Schedule: Initiated June 1999, Targeted Completion December 2001

The Township-Village Industrial Enterprises (TVIE) project will contribute to regulatory reform in several ways. Research will focus attention on pollution exposure risks for workers inside TVIE facilities, which will provide insights helpful to policymakers in decentralizing the national regulatory system. The project will also demonstrate methods for measuring the gap between actual and optimal emissions and suggest principles for appropriate adjustment of regulatory instruments to narrow the gap.

Water Conservation Project

Partners: Ministry of Water Resources

Focus: Agriculture Management, Water Management

Funding: \$74 Million

Status/Schedule: Initiated 2000, Targeted Completion 2006

This water conservation project aims to enhance the beneficial use of water resources, agriculture production capacity, and farmer incomes by increasing the value of agriculture production per unit of consumed water, reducing non-beneficial water losses, and establishing mechanisms for sustainable use and management of water resources in irrigated areas. Twenty-seven counties from the provinces of Hebei and Liaoning and the municipalities of Beijing and Qingdao have been identified as sites for subprojects, which have already been prepared at the feasibility level. The project components will include irrigation and drainage, agriculture support and services, forestry and environmental monitoring, and institutional development.