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# **GEF Action in the Asia-Pacific Region :**

## **Project Factsheets**



**GEF**

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## AZERBAIJAN

# Program for Phasing-out Ozone Depleting Substances

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<b>Focal Area:</b> Ozone Depletion	<b>Project Dates:</b> 1998–2002	<b>GEF Grant Financing:</b> \$6.87 million
<b>Co-Financing:</b> Private sources, \$2.19 million; Government of Azerbaijan Republic, \$36,000 (in kind)		

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This project undertook to help various enterprises that consume the bulk of ozone depleting substances in Azerbaijan to convert to non-ozone-depleting materials before legal supplies of ODSs are discontinued. The refrigeration and halon sectors were the primary focus. The project's goals are to 1) support conversion of major users of ozone depleting substances to more benign substances, 2) train trainers on refrigeration service and maintenance, and 3) build institutions' capacity to implement and monitor the phase-out process.

The project entailed technology conversion and technology assistance and training. Specifically, two refrigeration plants were assisted in converting to non-ODSs, and a comprehensive national program for recovery and recycling

of refrigerants was instituted. A National Recovery and Recycling Center for Halon Management and Banking was also established. Further, the project helped train trainers on refrigeration service and maintenance, and provided resources to strengthen the national institutional structure as well as implement monitoring activities to phase out ODSs.

The project's main benefits are to 1) phase out the use of ODSs in Azerbaijan, 2) avoid economic and social disruption from discontinuation of imports of ozone depleting substances and allow key industries to maintain domestic and export markets, and 3) strengthen institutional capacity for monitoring and enforcement of the phase-out. (Implemented by the United Nations Development Programme and the United Nations Environment Programme.)

## BANGLADESH

# Aquatic Biodiversity Conservation

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1999–2004	<b>GEF Grant Financing:</b> \$5.00 million
<b>Co-Financing:</b> \$55.84 million		

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The objective of this project is to support environmentally friendly and sustainable fish and shrimp production for domestic consumption and exports and to help fight poverty in Bangladesh by improving the livelihoods of people who depend on fishing. To protect the internationally important Ganges-Brahmaputra floodplain, the project mainstreams aquatic biodiversity conservation in the daily activities of fisheries and related sectors. Up to 50 pilot-scale community-managed aquatic sanctuaries will be established in small rivers and channels with flowing waters and in areas where fishing rights are not leased. These inland water habitats and floodplains are important wintering and stopover grounds for migratory shorebirds.

The project will undertake a full feasibility study covering engineering, aquaculture, socioeconomics, and community organization; incorporate the results of consultations with local communities; examine the environmental and economic

feasibility of proposed interventions; and determine what is needed to ensure that smallholder shrimp farmers will also be able to benefit from them. The project supports freshwater aquaculture extension and training to increase fish supplies from aquaculture through intensified yields and increased areas under production, to strengthen extension links by which newly researched technologies reach farmers, and to improve the management of fisheries at the district level. Finally, the project will help strengthen the basis for aquatic resources policy development.

Project benefits include 1) an enhanced knowledge base for sound management and decisionmaking, including monitoring and evaluation for sustainable long-term aquatic ecosystem management; and 2) development of action plans, including policies for mainstreaming biodiversity conservation within the fisheries sector. (Implemented by the World Bank.)

## BANGLADESH

# Biodiversity Conservation in the Sundarbans Reserved Forest

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1998–2006	<b>GEF Grant Financing:</b> \$12.20 million
<b>Co-Financing:</b> \$63.30 million		

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The goal of this project is the development of a sustainable management and biodiversity conservation system for all the resources of the Sundarbans Reserved Forest, based on rational plans and the participation of all key stakeholders. This forest and its surrounding buffer zone are one of the most diverse natural resource areas in Bangladesh; it provides habitat for the highly endangered Bengal tiger and has been recognized as an internationally important Ramsar wetland site.

The project takes an integrated approach to conserve biodiversity and improve forest management; improve institutional capacity to manage the reserved forest itself; reduce the poverty level of the 2 to 3 million people living in the buffer zone by expanding economic opportunities, improving social infrastructure, improving organizations for resource users, and facilitating stakeholder participation in resource management; and adopting a supportive set of policies, especially those related

to charging economic prices for access to the reserved forest's resources.

Project activities aim to consolidate and strengthen effective organization of the forest; support biodiversity conservation throughout the forest and its buffer zone by incorporating biodiversity conservation considerations in sustainable productive activities, management of wildlife resources, and integrated conservation management planning; increase support for biodiversity conservation by local communities through participatory environmental education, community awareness activities, and ecotourism development; and establishment of biodiversity monitoring.

Project benefits include 1) ensuring long-term conservation of the rich biodiversity of the Sundarbans region, and 2) enhancing rural livelihoods through sustainable natural resource management. (Implemented by the World Bank.)

## BANGLADESH

# Coastal and Wetland Biodiversity Management at Cox's Bazar and Hakakuki Haor

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1999–	<b>GEF Grant Financing:</b> \$6.20 million
<b>Co-Financing:</b> UNDP, \$3.33 million; Government of Bangladesh, \$3.24 million; other international, \$510,000		

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This project supports the Bangladesh Department of Environment's efforts to operationalize the ecologically critical area (ECA) concept at two main sites, one within the country's long and biodiversity-rich coastal zone, and the other at one of the country's largest and most important inland freshwater wetlands. The project's overall objective is to conduct some effective demonstrations to create important opportunities for replication in coastal, freshwater wetland, and other ecosystems throughout the country, including sites that are considered ECAs.

Project activities include the introduction of legally instituted protection measures to regulate and reduce pressures facing critical ecosystems and establishment of an effective management authority at the field level. The project also is establishing village conservation groups to increase aware-

ness of and encourage participation by local communities in resource use decisionmaking and management—i.e., to undertake urgent conservation measures and coordinate the implementation of sustainable use strategies and alternative sustainable livelihoods to replace nonsustainable resource uses. In addition, ecological information is being collected and a management plan prepared to further specify locations and vulnerabilities of critical habitats.

Project benefits include 1) facilitation of efforts to conserve globally significant biodiversity through effective legal protection, 2) eliminating the risk of major imminent loss of biodiversity, 3) increasingly sustainable fisheries, 4) enhanced long-term land productivity, and 5) reduced pressures on renewable resources. (Implemented by the United Nations Development Programme.)

## Integrated Management of Jigme Dorji National Park

**Focal Area:** Biodiversity  
**Co-Financing:** \$1.03 million

**Project Dates:** 1996–2002

**GEF Grant Financing:** \$1.50 million

Jigme Dorji National Park is the largest park in Bhutan and one of the most biologically rich on the subcontinent. It protects eight vegetation types and is home to nearly 1,500 plant species, as well as to 31 mammal and more than 300 bird species. This project is strengthening the park's integrated management by helping park management address the root causes of the three primary threats facing the park: unsustainable use of mountain grasslands and other grazing areas, unsustainable use of mountain forest resources, and poaching of plant and animal resources and human-caused fires.

The project has two major components. The first of these involves better protection of the park by demarcating boundaries, conducting training, providing basic infrastructure development, and developing agreements on zoning by work-

ing with park communities to prepare natural resource management plans for using resources sustainably. The second area involves implementing elements of these community plans by promoting sustainable livelihoods in traditional agriculture and livestock raising as well as nontraditional sectors such as the supply of electricity from micro-hydro installations.

Project benefits include 1) conserving the variety of plants and animals coexisting in different ecosystems in the park, 2) modeling protected area management based on participatory planning and implementation, 3) improving quality of life in 13 communities, 4) enhancing the capabilities of park management and staff and staff of other relevant agencies, and 5) providing useful information to other parks within Bhutan. (Implemented by the United Nations Development Programme.)

## BHUTAN

### Trust Fund for Environmental Conservation

**Focal Area:** Biodiversity  
**Co-Financing:** \$7.57 million

**Project Dates:** 1991–1997

**GEF Grant Financing:** \$10.00 million

For its small size, Bhutan may possess the greatest biological diversity in the world; it is determined to prevent the environmental degradation that has occurred elsewhere in the Himalayas. To this end, this project created a conservation trust fund, strengthened national environmental institutions, and established and operated a protected area network system.

Under the auspices of this project, contributions and pledges to the Bhutan Trust Fund have increased the principal to more than \$23 million. The fund has been catalytic in the adoption of a revised national protected areas system representing the country's ecosystems; official gazettelement of Royal Manas National Park, Jigme Dorji Wildlife Sanctuary, Black Mountain National Park, and Bomdelling Wildlife Sanctuary; and development of a model management plan and operational plans. These plans have enabled bilateral

and non-governmental organizations to provide parallel financing to strengthen the management of specific protected areas. The project has also helped upgrade the Wildlife Division to a Nature Conservation Division with 164 staff members, provided training to and revised the curriculum for the Bhutan Forest Institute, strengthened the Forest Services Division's information management with new equipment and staff training, and upgraded Jigme Dorji to a national park.

Project benefits include 1) improved protection of biodiversity and preservation of forest cover, 2) strengthened institutions for better and sustainable environmental management, 3) supplementing of available resources to carry out long-term planning for biodiversity conservation, and 4) enhancement of government's sustainable development capability. (Implemented by the World Bank.)

## CAMBODIA

# Biodiversity and Protected Area Management Pilot Project for the Virachey National Park

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1999–2003	<b>GEF Grant Financing:</b> \$2.75 million
<b>Co-Financing:</b> \$2.25 million		

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This project aims to improve the capacity of the Cambodian Ministry of Environment to plan, implement, and monitor an effective system of national protected areas. To that end, the project has two related immediate objectives: 1) to develop and test proactive measures to minimize unsustainable exploitation and degradation of the biodiversity of national and global significance in Virachey National Park, and 2) to use the experiences gained from Virachey to formulate institutional models for the development of the country's national protected areas system.

The project's first component entails the development of national policy and capacity to support the formulation of a long-term strategic vision for the national protected areas system. A second component addresses park protection and management, and is aimed at developing and testing pilot

management approaches at Virachey National Park in northeast Cambodia. The third component involves community development and looks to develop approaches and procedures for including local communities more directly in the management of Virachey National Park. Through these various components, training programs will be conducted, operational guidelines created and issued, infrastructure completed, an institutional framework developed, and a five-year management plan developed.

Project benefits include 1) park management organization established, 2) conservation awareness heightened, 3) biophysical and socioeconomic surveys completed, and 4) selective community-based livelihood programs implemented. (Implemented by the World Bank.)

## CAMBODIA

# Renewable Energy Promotion

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<b>Focal Area:</b> Climate Change	<b>Project Dates:</b>	<b>GEF Grant Financing:</b> \$6.08 million
<b>Co-Financing:</b> \$10.50 million		

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The main objective of this project is to eliminate the policy, institutional, financing, and informational barriers that impede market development for renewable energy in Cambodia so that rural people can have increased access to electricity services. A second objective is to accelerate rural transformation through expanding electricity access by offering technical assistance and capacity building for key stakeholders and investments in renewable energy systems for isolated mini-grids using hydro sources and off-grid solar and village hydro.

The project has two main components: technical assistance and investments. The technical assistance component supports barrier removal, which includes addressing the policy and legal framework, access to financing, market information, institutional capacity, awareness raising, and up-

front investment costs. This component also encompasses capacity building of various stakeholders including staff, private sector technicians and managers, consumers, and loan officers. The investment component addresses investments in grid-connected small renewable power stations (hydro), and in off-grid systems (solar and village hydro). Outputs of this project will include three mini-hydro projects supplying energy to grids on a commercial basis, and the installation of between 5,000 and 10,000 solar home systems.

Project benefits include 1) 5 percent of energy generation capacity fulfilled by renewable energy systems, 2) strong renewable energy businesses created, and 3) renewable energy employees educated and trained. (Implemented by the World Bank.)

## CHINA

# Lop Nur Nature Sanctuary Biodiversity Conservation

**Focal Area:** Biodiversity  
**Co-Financing:** \$780,000

**Project Dates:** 1998–2002

**GEF Grant Financing:** \$730,000

The Lop Nur region of the Gashun Gobi desert is home to the world's last surviving genetically pure herd of wild Bactrian camels; it was recently declared a nature sanctuary by the Chinese government. This project promotes effective establishment and management of the sanctuary by providing the enabling conditions for preserving its globally significant endangered biodiversity. The project's overall objectives are to ensure protection for unique endemic species, protect unique desert ecosystems and landforms, train personnel in desert biodiversity conservation management, and fully integrate local communities into conservation efforts.

The project is establishing a sanctuary headquarters and constructing checkpoints to ensure that entry is regulated and hunting eliminated. It is also establishing a scientific research program; this program will particularly emphasize development of embryo transplant facilities to ensure that

wild camels can be reared in captivity, research on the effects of former nuclear testing on the camel's survival, and monitoring of the habits of the wild camel to better understand its adaptation to the harsh environment including its ability to survive on salty water. The project is also preparing a public awareness campaign to ensure the cooperation and goodwill of local communities, and to inform and educate hunters and miners of the underlying reasons for sanctuary establishment.

Project benefits include 1) sanctuary establishment and preservation of the Lop Nur arid ecosystem and of the species that have adapted to this ecosystem; 2) implementation of sanctuary management plan developed in close collaboration with local, provincial, and national authorities; and 3) development of replicable models of community awareness-raising programs in biodiversity conservation and sanctuary management. (Implemented by the United Nations Environment Programme.)

## CHINA

# Multi-agency and Local Participatory Cooperation in Biodiversity Conservation in Yunnan Upland's Ecosystem

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 2000–

**GEF Grant Financing:** \$750,000

Yunnan Province is a globally important resource of wild species, containing the richest biodiversity of all major animal and plant taxa of China. Yunnan has more than 300 mammal species (51 percent of China's total), 793 bird species (64 percent), 143 reptile species (38 percent), 102 amphibian species (46 percent), 366 fish species (46 percent), and more than 10,000 insect species (about 40 percent). Yunnan includes 46 rare and endangered species of wildlife, and it lies along important bird migration routes. The goal of this project is to protect the upland biodiversity of Wuliangshan (Yunnan), and ensure that it is effectively and efficiently managed for sustainable use, with the full cooperation and collaboration of key stakeholders. The project aims to maintain the current level of biodiversity, especially of threatened species of plants and vertebrate animals; improve the quality of existing forest habitat; and maintain the

extent of current areas of biodiversity habitat.

To achieve these objectives, the project comprises five complementary components: creation of intersectoral planning and management mechanisms; capacity building of the Wuliangshan Reserve Co-management Council and the Qinshan Watershed Management Council; promotion of ecologically sustainable livelihoods; public awareness, training, and education; and community-based biodiversity inventory and monitoring.

Project benefits include 1) development of replicable models of community-based natural resources; 2) strengthened institutional capacity for sustainable resource management to conserve biodiversity at the village, township, and county levels, and at the Wuliangshan Reserve; and 3) reduction of human pressures on biodiversity. (Implemented by the United Nations Development Programme.)

## CHINA

# Nature Reserves Management

**Focal Area:** Biodiversity  
**Co-Financing:** \$5.70 million

**Project Dates:** 1995–2002

**GEF Grant Financing:** \$17.80 million

The goals of this project are to integrate local communities into nature reserve management, develop skills and human resources and improve nature protection and management at the field level, and support economic alternatives compatible with biodiversity conservation for local communities.

Project activities include efforts to develop more effective management and protection systems in five pilot reserve areas of international significance. The project is creating new incentives for community involvement in long-term sustainable use of biological resources. A pilot program is being introduced to resolve land-use conflicts adjacent to the Qinling group of four reserves. The project looks to instill more sustainable management of these areas by reducing harvesting in forests and transferring workers to more environmentally sustainable employment. A series of policy reforms and investments is being implemented, creating a pro-

tected core zone surrounded by an experimental zone that would be managed for sustainable use of its resources. The project is also strengthening technical and managerial skills in biodiversity by developing a national training team. Other project activities include the development of a management information system to support improved management decisionmaking and the financing of research efforts in five reserve areas and the establishment of a national small-scale competitive research grants program.

Project benefits include 1) protecting rare biodiversity, improving water catchment protection, and increasing carbon sequestration; 2) strengthening human resources and sector institutions associated with nature reserves; and 3) providing other parts of China with new models of improved nature reserve management, human resource management, and resolution of land use conflicts. (Implemented by the World Bank.)

## CHINA

# Sustainable Forest Development Project, Protected Areas Management Component

**Focal Area:** Biodiversity  
**Co-Financing:** \$46.15 million

**Project Dates:**

**GEF Grant Financing:** \$16.35 million

The main objectives of this project are to develop and apply innovative and effective approaches to managing the last remaining natural forest areas in China and to conserving globally significant forest and mountain biodiversity, and to establish tree plantations to relieve pressures on natural forest resources. The approaches developed in this project will provide models for wider application under the government's Natural Forest Protection Program (NFPP).

The project has three components addressing natural forest management, plantation establishment, and protected areas management. This last is the component covered by GEF funding. The GEF grant is being used to 1) enhance the management of priority nature reserves located in the logging-ban areas of the NFPP; 2) identify and survey the wildlife in areas important for biodiversity conservation in Western Sichuan, which forms part of a globally important

ecoregion known as Southwest China Temperate Forests; 3) increase participation of communities in nature conservation and the sustainable management of natural resources; 4) strengthen the capacity of institutions, particularly at the provincial and reserve levels, to manage natural forest/nature reserve sustainability; and 5) support key protected area and natural forest-related policy studies.

Project benefits include 1) bringing over 1 million hectares of important biodiversity areas under active management; 2) gaining the substantial involvement and participation of local communities in nature reserve management planning and implementation; 3) reducing community reliance on forest resources inside biodiversity-important zones; and 4) increasing local government capacity to supervise, monitor, and implement conservation and sustainable resource use activities. (Implemented by the World Bank.)

## CHINA

# Wetland Biodiversity Conservation and Sustainable Use

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1999–2004	<b>GEF Grant Financing:</b> \$12.03 million
<b>Co-Financing:</b> \$23.02 million		

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Rates of wetland loss and degradation in China are high due to human development pressures, such as drainage, overuse of water resources, conversion to agricultural and other uses, unsustainable harvesting and resource use, illegal hunting, siltation, and pollution. The objective of this project is to secure the conservation of globally significant wetlands biodiversity in the country. To this end, the project is combating threats to wetland biodiversity, promoting sustainable development in and around the wetlands sites, and developing local and national capacity to integrate conservation into the development process.

Project activities are taking place at four representative but different sites with high global biodiversity importance—Sanjiang Plain, Ruoergai Marshes, Yancheng Coast, and

Dongting Lakes. In addition, the project is working to develop sustainable alternative livelihoods with local communities in and around the wetlands areas to decrease pressures on local biodiversity. Other project activities are aimed at incorporating wetland biodiversity conservation into national conservation plans, legislation, and processes.

Project benefits include 1) removing threats to global biodiversity at each demonstration area, 2) replicating and disseminating experience from the four sites to other wetlands sites in China, and 3) demonstrating the viability of combining sustainable development with biodiversity conservation and contributing sustainably to community development and poverty eradication in and around the four sites. (Implemented by the United Nations Development Programme.)

## CHINA

# Barrier Removal for Efficient Lighting Products and Systems

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<b>Focal Area:</b> Climate Change	<b>Project Dates:</b> 2000–	<b>GEF Grant Financing:</b> \$8.14 million
<b>Co-Financing:</b> \$18.07 million		

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This project aims to broaden the China Green Lights Program, a campaign to dramatically cut lighting electricity demand by introducing more efficient lightbulbs in buildings and factories, to a major national effort by addressing identified market barriers. The project will upgrade the quality of Chinese lighting products; increase consumer awareness of, and comfort with, efficient lighting products; make quality, efficient lighting products more affordable to consumers; increase sales of efficient lighting products and services; establish a vibrant, self-sustaining market in efficient lighting products and services and associated supporting policies and services in order to maintain and expand upon the gains achieved during the project period; and monitor, evaluate, and refine project activities in pursuit of these objectives.

The project will issue and implement product and de-

sign standards. High-quality products will be certified, and a labeling program will be implemented. The project will organize a conference on problems and potential solutions, and manufacturers will undertake efforts to address the specific problems identified. Market aggregation activities will be implemented to increase sales of quality products. Consumer education, information dissemination, and training for professionals will be undertaken to increase public awareness. Financing programs will be successfully implemented and replicated; and project reporting, program evaluations, and surveys will be completed.

Project benefits include 1) reduction of lighting energy use in China by 10 percent in 2010, and 2) reduced greenhouse gas emissions in China and worldwide. (Implemented by the United Nations Development Programme.)

## CHINA

# Barrier Removal for the Widespread Commercialization of Energy-Efficient CFC-Free Refrigerators in China

**Focal Area:** Climate Change  
**Co-Financing:** \$31.29 million

**Project Dates:** 1998–2003

**GEF Grant Financing:** \$9.86 million

Studies have shown that existing Chinese refrigerator technology could be improved, reducing energy consumption by more than 40 percent for many popular refrigerator models. This project is working to reduce China's future greenhouse gas emissions by transforming the refrigerator market in China to produce and use more energy-efficient models. The project is designed to achieve widespread commercialization of energy-efficient refrigerators by removing key technical and market barriers to their production, sale, and use. One of the main goals of the project is to demonstrate the "win-win" nature of energy-efficiency investments to manufacturers, consumers, and lending agencies to ensure private sector sustainability of the project.

Project components are designed to support compressor manufacturers in producing high-efficiency compressors and refrigerators, create new regulatory requirements and

market-based incentives for refrigerator manufacturers to design and produce high-efficiency refrigerators, educate consumers so as to create market conditions to increase sales of energy-efficient refrigerators, and establish a management capacity for project monitoring and evaluation of project results.

Project benefits include 1) reduced GHG emissions by the refrigerator sector through increased energy efficiency; 2) net savings for consumers purchasing more efficient refrigerators over the product's lifetime; 3) reduced load requirements for electric power generation, leading to economic and financial benefits; 4) increased sales for manufacturers that capitalize on more efficient designs; and 5) reduced sulfur oxide emissions from power generation, leading to improved air quality. (Implemented by the United Nations Development Programme.)

## CHINA

# Capacity Building for the Rapid Commercialization of Renewable Energy

**Focal Area:** Climate Change  
**Co-Financing:** \$18.84 million

**Project Dates:** 1997–2004

**GEF Grant Financing:** \$8.83 million

The goals of this project were to develop capacity to commercialize renewable energies and to remove barriers to disseminating alternative energy technologies. These barriers include institutional fragmentation, lack of business skills, incomplete assessment of renewable resources, lack of facilities for testing and certifying equipment, high cost of renewable energy systems, and lack of suitable funding mechanisms. The project aimed to remove some of the above-mentioned barriers and to build capacity for market-based deployment of renewable energy. The project sought to spur a cycle in which increased demand leads to increased supply, which in turn reduces production costs, thereby sustaining further increases in demand.

Project activities worked to operationalize market-oriented renewable energy dissemination; strengthen China's center for renewable energy development; train policymak-

ers, renewable energy professionals, and businesspeople in market-based renewable energy development, developing national capacity to assess renewable energy resource potential in China; and develop standards, codes of practice, and certification procedures for the renewable energy industry. Additional project activities were designed to remove barriers to electrification through solar and wind hybrid systems, wind farm development, large-scale anaerobic biogas production, and bagasse co-generation.

Project benefits include 1) reduced carbon dioxide emissions by up to an estimated 10 million tons per year, 2) strengthened political climate for renewable energy development, 3) increased quantity of energy produced with little or no local air pollution, and 4) reduced water pollution, e.g., from pig farm wastes. (Implemented by the United Nations Development Programme.)

## CHINA

### Demonstration of Fuel Cell Bus Commercialization in China (Phase II, Part I)

**Focal Area:** Climate Change  
**Co-Financing:** \$10.12 million

**Project Dates:**

**GEF Grant Financing:** \$5.82 million

This project will help catalyze the cost reduction of fuel-cell buses (FCBs) for public transit applications in Chinese cities by supporting parallel demonstrations of FCBs and their fueling infrastructures. The project will help the public transit companies of Beijing and Shanghai obtain six FCBs each and operate them over a combined total of 1.6 million kilometers. The project will also focus on defining a detailed strategy for large-scale FCB implementation in China. The project constitutes the first part of phase II of a four-phase program that will culminate in the market-based commercial production and use of FCBs in China.

In this project, two commercially relevant demonstrations of the technical feasibility of FCBs and their refueling infrastructure will be held, and a substantial body of knowledge about reliability and failure modes, opportunities for

improving the design and reducing the cost of FCBs in China, and Chinese public ridership responses will be accumulated. Project activities will also address increasing capacity among public transport policymakers and planners at the national and municipal levels and at bus companies in Beijing and Shanghai to optimize public transport management, technologies, infrastructure, and operations.

Project benefits include 1) enabling technology suppliers to identify cost-reduction opportunities and helping host public transit operators gain valuable experience; 2) helping build capacity related to FCBs; 3) enhancing scientific, technical, and industrial capacity for commercializing FCBs; and 4) increasing understanding of FCBs among government, investors, media, and other key actors. (Implemented by the United Nations Development Programme.)

## CHINA

### Development of Coalbed Methane Resources in China

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 1991-1997

**GEF Grant Financing:** \$10.00 million

Coal mining contributes an estimated 10 percent of total methane emissions from human activities. A third of these come from China, which produces the most coal in the world, mostly from underground mines, which have high emission levels. This project took a three-pronged approach to control methane emissions to formulate a national strategy to develop the methane industry, introduce and demonstrate a range of technologies and techniques to control and use methane emissions, and sensitize policymakers to the environmental and economic significance of using methane resources.

At three sites, the project demonstrated a variety of techniques and technologies that Chinese coal mines can use to reduce atmospheric methane emissions and recover clean-burning methane as a fuel. The project also created a policy and institutional climate for developing a coalbed methane industry. Specifically, the project developed a demonstration

project on methane recovery at one site; prepared a detailed assessment and database of China's coalbed methane resources; demonstrated the drilling of vertical wells prior to mining at another site; demonstrated the ability to design and implement an integrated methane recovery system at a third site; and trained personnel from various research institutes, central government, coal corporations, mining administrations, coal geology committees, municipal gas companies, and planning divisions.

Project benefits include 1) improving local and global air quality by reducing sulfur dioxide, nitrogen oxides, particulates, and methane in the atmosphere; 2) demonstrating improved methane recovery; 3) developing more efficient and effective uses of recovered methane; and 4) improving mine safety and productivity. (Implemented by the United Nations Development Programme.)

## CHINA Efficient Industrial Boilers

**Focal Area:** Climate Change  
**Co-Financing:** \$68.57 million

**Project Dates:** 1996–2002

**GEF Grant Financing:** \$32.81 million

Medium- and small-scale industrial boilers consumed over 350 million tons of coal in China in 1990, accounting for around 35 percent of the country's coal use and about 30 percent of greenhouse gas emissions from energy consumption. The lack of access to advanced international technologies is a major impediment to energy-efficiency (and pollution control) improvements in China's industrial boiler market. The principal objective of this project is to improve the energy efficiency of small- and medium-scale coal-fired industrial boilers in China by acquiring foreign advanced technologies, adapting them to Chinese conditions, and broadly disseminating the results throughout China. The project will also upgrade China's industrial boiler engineering, production management, operator training, and service and marketing capabilities; strengthen the domestic exchange of information on high-efficiency industrial boiler technologies and

commercial experience; and improve efficiency, coal quality, and environmental standards and regulatory enforcement for the industrial boiler sector.

Boiler development and dissemination will proceed in two phases. In phase I, technology will be developed and demonstrated. Phase II will address full-scale production and mass marketing, industry awareness campaigns, and coordination with local government agencies on devising incentives and regulatory schemes.

Project benefits include 1) direct savings over the 20-year lifetime of the project of an estimated 65 million tons of coal equivalent, resulting in a reduction of 175 million tons of carbon dioxide; and 2) significant reductions of local pollution emissions due to improved boiler designs. (Implemented by the World Bank.)

## CHINA Energy Conservation

**Focal Area:** Climate Change  
**Co-Financing:** \$180.00 million

**Project Dates:** 1997–

**GEF Grant Financing:** \$22.00 million

The main objective of this project is to achieve large, sustained, and growing increases in energy efficiency, and associated reductions in the rate of growth in carbon dioxide emissions and other pollutants, through the introduction, demonstration, and dissemination of new project financing concepts and market-oriented institutions to promote and implement energy-efficiency measures in China.

Specifically, the project supports the establishment, pilot testing, and commercial demonstration of energy management companies in three provinces of China; these will engage in self-sustaining energy-efficiency investments through energy performance contracting. The demonstration of the energy service company concept will be followed in a second phase by a program to expand the energy performance contracting concept to other parts of China and through more varied applications (e.g., leasing, Chinese-foreign joint ventures). The project

also seeks to achieve increases in energy efficiency by strengthening China's national efforts to provide access to information concerning successful domestic experiences in energy-efficiency measures and projects, geared in particular to financial decisionmakers. This information dissemination component will strengthen China's programs to collect information relevant to enterprise managers on the results of previous energy conservation projects, and especially their profitability, and disseminate this information more effectively. The project will also overcome barriers to development of an energy conservation market.

Project benefits include 1) acceleration of the general implementation of energy conservation projects with mature technology and economic feasibility, 2) promotion of the Chinese energy conservation industrialization process, 3) increased energy efficiency, and 4) reduction in the growth of GHG emissions. (Implemented by the World Bank.)

## CHINA

# Energy Conservation and Pollution Control in Township and Village Enterprise Industries

**Focal Area:** Climate Change  
**Co-Financing:** \$10.55 million

**Project Dates:** 1995–2003

**GEF Grant Financing:** \$10.00 million

Township and village enterprises (TVEs) in China employ 128.6 million people in both industrial and nonindustrial activities. Four TVE subsectors—brickmaking, coking, metal casting, and cement—account for 54.2 percent of total carbon dioxide emissions. This project aims to raise energy efficiency in the rural industrial sector in China by targeting these TVE subsectors for demonstration projects involving improved technologies, innovation, maintenance techniques, technical transformation, and staff training.

The project is being implemented in two phases. In phase I, the project developed a range of information needed to implement phase II, as well as developed the capabilities of TVE service institutions to demonstrate and diffuse energy-efficient technologies. These activities included inventorying appropriate energy-efficient technologies and developing a strategy to encourage creation of commercial markets

for them. Phase II is working to remove both supply and demand barriers to widespread dissemination of energy-efficient technologies by demonstrating key technologies and promoting markets for their commercialization. Activities in this phase include establishing incentives and monitoring systems to strengthen ongoing efforts to enforce relevant existing laws and regulations, providing capacity for implementing TVE-based energy conservation and product improvement investments in rural areas, and creating access to commercial financing for eight pilot projects in a replicable manner.

Project benefits include 1) reduced GHG emissions; 2) improved quality and quantity of TVE products; and 3) removal of policy, technology, market, and financial barriers to broad dissemination of energy-efficient technologies. (Implemented by the United Nations Development Programme.)

## CHINA

# Issues and Options in Greenhouse Gas Emissions Control

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 1992–1994

**GEF Grant Financing:** \$2.00 million

China emits more carbon dioxide into the atmosphere than any nation in the region and half of the total carbon dioxide emissions from all developing countries. This project's key focus was on systematically and quantitatively examining the issues and options for controlling GHG emissions, particularly carbon dioxide, across various sectors of the Chinese economy. It also supported government-initiated efforts to obtain more reliable data on carbon dioxide and methane emissions on which to base a control strategy.

The project's first component resulted in detailed information on carbon dioxide sources, relative cost effectiveness of options to reduce emissions, and economic feasibility of reduction targets. This information is helping policymakers develop least-cost strategies and economic policies on reducing GHG emissions to help meet international obligations on climate change. A second component

of the project worked to reduce coal use in residential and commercial sectors through more efficient end use and improvements in the quality of coal. This component focused too on raising the efficiency of China's 400,000 industrial boilers to international standards. The project also trained a cadre of nationals in analyzing GHG emissions reduction, energy efficiency across sectors, alternative technology, climate change impacts, cost effectiveness and economics, and policies and institutions, as well as in successful technology transfer and integration of energy and environmental concerns in development planning.

Project benefits include 1) improved air quality, 2) reduced GHG emissions, 3) enhanced government capacity in gathering and analyzing relevant data, and 4) provision of better information for policymakers. (Implemented by the United Nations Development Programme.)

## CHINA

# Passive Solar Heating for Rural Health Clinics

**Focal Area:** Climate Change  
**Co-Financing:** \$810,000

**Project Dates:**

**GEF Grant Financing:** \$780,000

The government of China is currently undertaking a major program of reconstruction and rehabilitation of rural health clinics. While building design manuals and guidelines include passive solar heating features, these design features have rarely been incorporated in practice. Barriers to broad-scale use of the technology are limited awareness of the benefits of passive solar heating among health sector planners and decisionmakers, shortage of appropriate technical expertise, and a lack of demonstrated and disseminated life-cycle cost savings and other benefits. This project takes advantage of the large-scale health reconstruction and rehabilitation initiative to overcome these barriers and to promote the use of solar heating designs throughout China's rural health system and public building program.

The project targets 33 counties located in China's colder provinces in which some 300 to 400 health clinics are being

rehabilitated or reconstructed. It is developing appropriate designs for passive solar health clinics and will construct about 30 prototype passive solar clinics to demonstrate the technology. It will then conduct outreach and promotion of the designs and their performance advantages, and will work to build capacity so as to give design institutes the tools they need to further develop the technology in China.

Project benefits include 1) stimulation of health sector and other community facility planners to adopt passive solar building designs, 2) strengthened capacity of architectural and engineering design institutes to design and build energy-efficient passive solar buildings, 3) demonstration of the life-cycle cost advantages of energy-efficient passive solar buildings in China, and 4) reduced carbon dioxide emissions. (Implemented by the World Bank.)

## CHINA

# Promoting Methane Recovery and Utilization from Mixed Municipal Waste

**Focal Area:** Climate Change  
**Co-Financing:** \$14.28 million

**Project Dates:** 1996-2001

**GEF Grant Financing:** \$5.29 million

This project aimed to help China's National Environmental Protection Agency (NEPA) overcome barriers to the use of landfill gas technology and fully competitive sale of methane and electricity to energy bureaus and companies. In the process, the project sought to strengthen NEPA's capacity to disseminate results and undertake similar projects elsewhere in China.

The project established demonstration plants to capture methane from landfills and use it as fuel or to generate electricity. It created a training facility for landfill operators, energy service companies, municipalities, and other businesses on building and operating landfill energy plants. It set up institutional arrangements to operate landfill gas recovery technology and produce and sell gas and electricity at each site. It then demonstrated approaches to establishing the price of

electricity generated and lower the cost of future plants to make landfill gas electricity financially viable. The project concluded by preparing an action plan to promote widespread replication and adoption of landfill gas recovery technology in China.

Project benefits include 1) providing large quantities of a clean-burning fuel and decreasing the need for coal, reducing greenhouse gas emissions and their adverse impacts on natural ecosystems; 2) encouraging more environmentally sensitive solid waste management practices, capturing other landfill gas pollutants leading to ground-level ozone, and protecting groundwater from leachate contamination; 3) providing local people with jobs in small enterprises engaged in the recovery, cleaning, and use of methane; and 4) increasing the institutional capacity of local government. (Implemented by the United Nations Development Programme.)

## CHINA Renewable Energy Development

**Focal Area:** Climate Change  
**Co-Financing:** \$372.27 million

**Project Dates:** 1998–2002

**GEF Grant Financing:** \$35.73 million

This project supports the development of the two most promising renewable energy technologies for rural applications in China: wind farms and solar photovoltaics. The project is working to develop state-of-the-art wind and solar photovoltaic technologies to increase electricity supply in an environmentally sustainable way and improve access of dispersed rural households and institutions to modern energy.

The project has four components. The first of these addresses wind farm development; under this component, the project will develop 190 megawatts of grid-connected wind farms at up to five sites in four provinces. Under the solar photovoltaic component, the project supports the sale of photovoltaic or photovoltaic-wind hybrid systems to about 200,000 homes, businesses, or community facilities in four northwestern provinces. The project's technology develop-

ment component will accelerate technology upgrading to support local manufacturing of components of wind turbines and photovoltaic systems to provide high-quality products and performance as well as to reduce costs. Finally, the institutional support component provides assistance to strengthen institutional capacity and market infrastructure for large-scale commercialization of wind farms and solar photovoltaics.

Project benefits include 1) significantly reduced carbon emissions to the atmosphere, 2) provision of electricity services to rural households and institutions that currently lack them in four provinces, and 3) reduced air pollution through lower energy consumption and the use of less polluting technologies. (Implemented by the World Bank.)

## CHINA Renewable Energy Scale-up Program, Phase I

**Focal Area:** Climate Change  
**Co-Financing:** \$129.58 million

**Project Dates:** 2001–

**GEF Grant Financing:** \$41.57 million

This 10-year program supports the implementation of a national policy framework for renewable energy and removes barriers hindering large-scale commercial renewable energy markets. The policy framework will require that a share of electricity supply be met from renewable resources as part of a mandated market. In this way, the costs of renewable energy are expected to decline, and the economic and environmental benefits (both local and global) are expected to accelerate. The project also should reduce the cost and improve the performance of small hydro, wind, and selected biomass technologies; and increase market penetration of renewable energy technologies and, consequently, reduce greenhouse gas emissions from power generation.

The project is establishing a legal basis for a mandated market for renewable electricity, including identification of a

responsible authority and specification of penalties for non-compliance (e.g., through law or state council regulation). Systems for determining compliance with the mandated market will be demonstrated nationally and in pilot provinces. The project will also pilot efforts in three or more provinces that meet mandated market requirements. Project activities will additionally support improvements to the quality and performance of renewable energy equipment and strengthen the capability of renewable energy service industries in China, enabling them to respond to sharply increased market demand.

Project benefits include 1) electricity produced from renewable sources increased by about 1.7 gigawatts of installed capacity by 2010, 2) carbon emissions reduced by 1.7 gigawatts by 2010, and 3) electricity provided to isolated rural areas now not adequately served. (Implemented by the World Bank.)

## CHINA

# Sichuan Gas Transmission and Distribution Rehabilitation

**Focal Area:** Climate Change  
**Co-Financing:** \$112.70 million

**Project Dates:** 1992–2001

**GEF Grant Financing:** \$10.00 million

The Sichuan Petroleum Administration transmits some 16 million cubic meters of natural gas a day through an aging 2,800-kilometer pipeline grid. A recent assessment found this grid to be corroded, subject to frequent breakdowns and leaks, and badly needing rehabilitation. The goal of this project is to improve the safety, reliability, and efficiency of the gas delivery pipeline grid in Sichuan, thereby improving service and decreasing gas leaks and methane emissions. The project involves installation of gas treatment facilities, rehabilitation of the gas-gathering system, establishment of appropriate safety regulations, and provision of technical assistance and training. All changes made under project auspices are intended to facilitate safe and efficient upgrading and expansion of the pipeline system over the next 20 years.

Project activities include supply and repair of existing control valves, supply and installation of additional valves at vent stacks and of chained caps and plugs at open-ended pipelines, and supply and replacement of line compressor seals; and development and implementation of comprehensive leak detection and repair programs. The project is also financing a twinning arrangement with a foreign pipeline operating company, system operating and monitoring instruments, purification and quality control facilities, and emergency response and rehabilitation equipment and materials.

Project benefits include 1) avoiding the leakage of 2 million tons of methane to the atmosphere, and 2) demonstrating a cost-effective way to reduce emission of greenhouse gases and improve the efficiency and reliability of gas delivery. (Implemented by the World Bank.)

## CHINA

# Second Beijing Environment Project

**Focal Area:** Climate Change  
**Co-Financing:** \$437.00 million

**Project Dates:** 1999–

**GEF Grant Financing:** \$25.00 million

This project focuses on the two most critical environmental issues for Beijing, namely: air pollution from scattered, nonpoint sources; and water pollution in the city's largest and most neglected catchment area. Its goals are to improve the quality of life for the citizens of Beijing by alleviating the city's acute air and water pollution problems and to significantly reduce China's greenhouse gas emissions. To meet these goals, the project is providing technical and financial support to help overcome barriers to accelerate conversion from coal to natural gas, and facilitate the development of sustainable and replicable supply and financing capacities. It also provides support for related measures on a pilot basis.

Project activities address conversion from coal to natural gas as an energy source, improving the energy efficiency of the city's extensive district heating systems, wastewater treatment, and environmental capacity building.

Project benefits include 1) reduction of ambient sulfur dioxide, carbon dioxide, and total suspended particulate concentrations by 30 percent during the heating season (and GHG emissions by at least 22 million tons of carbon); 2) improved air quality to meet class III standards; 3) significant reduction of acute respiratory illnesses; 4) improved water quality in the streams of the Liangshui River system to class V standards; and 5) provision of a model for replication and generation of secondary national and global benefits. (Implemented by the World Bank.)

## CHINA

### Targeted Research Related to Climate Change

**Focal Area:** Climate Change  
**Co-Financing:** \$1.69 million

**Project Dates:** 2000–

**GEF Grant Financing:** \$1.72 million

China, which currently ranks second worldwide in energy consumption, is also the world's second largest emitter of carbon dioxide, the most significant of all greenhouse gases. The goals of this project are to strengthen and develop the country's research capacity toward compliance with the UNFCCC; and to generate research for the development, improvement, and application of national GHG inventories. The project is addressing key emerging issues, such as rapidly growing GHG emissions from the increasing use of motorized vehicles for transportation, and synthetic fertilizers for crop production. The results obtained will serve as an estimation of emission factors critical to the improvement of GHG inventories. They will also enable China to prepare high-quality future national communications to the UNFCCC, and provide the information required to formulate climate change-

related policy in the country.

Project activities are focused on strengthening and developing capacity to estimate GHG emissions from China's road transportation sector, improve estimates of GHG emissions and sinks from land use change and forestry, and improve estimates of GHG emissions from the agricultural sector.

Project benefits include 1) generation of significant climate change data for the UNFCCC, and for use by researchers and policymakers worldwide; 2) new and improved methodologies for use by all countries, particularly developing ones, in their efforts to manage climate change and undertake their obligations to the UNFCCC; and 3) better data and information to help China develop related policy measures. (Implemented by the United Nations Development Programme.)

## CHINA

### Wind Power Development Project

**Focal Area:** Climate Change  
**Co-Financing:** \$86.70 million

**Project Dates:** 2000–

**GEF Grant Financing:** \$12.00 million

The goals of this project are to reduce greenhouse gas emissions and, consequently, the adverse environmental impacts of the power sector; increase the availability of electricity in rural areas; and increase the use of renewable energy for power generation. The project aims to replace current fossil fuel consumption with large-scale grid-connected wind power development. It is taking a generally bottom-up approach to accelerate the commercialization of wind power development in three selected provinces. It will also promote and disseminate these provincial experiences and lessons across the nation for possible wider replication. In this manner, the project expects to produce electricity in an environmentally friendly manner, thereby avoiding pollution. The initiative should help avoid the emission of thousands of tons of sulfur dioxide, nitrogen oxides, particulates, and nitrogen dioxide.

Project activities include improving the wind power tariff structure, developing competitive institutional models, implementing a market-oriented wind power policy at the provincial level, conducting wind resource measurement, building capacity at the provincial level, promoting the provincial experience to the nation, and financing three wind farms. It is anticipated that these activities will result in a direct carbon emission reduction of 60,000 tons for the three wind farms within the project's lifetime.

Project benefits include 1) removal of economic, financial, and institutional barriers; 2) widespread replication of wind power; 3) production of electricity in an environmentally friendly manner; 4) significant reduction in GHG emissions; 5) reduced local and regional air pollution; 6) improved public health; and 7) mitigation of acid rain. (Implemented by the United Nations Development Programme.)

## CHINA

# Ship Waste Disposal

**Focal Area:** International Waters  
**Co-Financing:** \$34.80 million

**Project Dates:** 1991-1997

**GEF Grant Financing:** \$30.00 million

This project sought to reduce pollution of international and territorial waters caused by ship waste through improved monitoring and analysis of the nature and magnitude of the problem; improved policy, regulatory, and incentive frameworks; and provision of facilities to receive, treat, and safely dispose of ship wastes. The six ports assisted by this project handle significant volumes of foreign and domestic traffic, generating 1.25 million tons of waste annually. Before this project, much of this waste was probably discharged at sea or in Chinese coastal waters.

The project also provided a basis for environmental monitoring activities and oil spill contingency planning. In addition, it developed the framework for recovering the cost of ship waste-handling facilities through appropriate user charges and established the basis for a ship waste tracking system to facilitate control of ship waste dumping at sea.

Activities in the project's national component included installation and operation of a ship waste monitoring system; study of oil spill accident contingencies and treatment of chemically contaminated water; preparation and application of a tariff schedule for ship waste disposal and treatment based on cost recovery; coordination among various national, provincial, and port authorities; and technical assistance and training. Activities in six port components included provision of waste collection, treatment, and disposal facilities; and establishment and upgrading of the environmental monitoring and enforcement capability of each port.

Project benefits include 1) a contribution toward major improvement in marine and coastal environment quality, 2) provision of a model for similar facilities in other Chinese ports, and 3) establishment of national standards for oil spill contingency planning. (Implemented by the World Bank.)

## Fiji

# Renewable Energy Hybrid Power Systems

**Focal Area:** Climate Change  
**Co-Financing:** \$670,000

**Project Dates:**

**GEF Grant Financing:** \$750,000

This project is aimed at reducing carbon dioxide emissions by setting up a sustainable institutional framework to accelerate commercial use of renewable energy hybrid systems to substitute for current use of diesel generators in Nabouwalu, for replication in other parts of Fiji. The project will establish a commercial rural energy service company (ESCO) which will charge a fee for the electricity supplied to consumers as a sustainable institutional framework to operate the renewable energy system. Commercial operation of the renewable energy-based rural ESCO is expected to reduce operation and maintenance costs, and mobilize more funding for rural electrification, thereby promoting widespread use of renewable energy in Fiji.

Project activities include establishing the legal, regulatory, and financial framework for the rural ESCO; developing an investment plan for the ESCO; training ESCO staff and

managers in business management skills and training ESCO staff in installation and maintenance of the renewable system; establishing a public awareness program to disseminate information on renewable energy; building capacity for the Fiji Department of Energy in renewable resource assessment techniques; and training department staff in equipment testing and technical specifications.

Project benefits include 1) a commercial and sustainable rural ESCO set up to run the Nabouwalu system and replicate it in five other government centers; 2) a sustainable legal, regulatory, and financial framework established for the ESCO; 3) increased public information and awareness of renewable energy systems; and 4) improved assessment of renewable resources. (Implemented by the United Nations Development Programme.)

## GEORGIA

# Arid and Semi-Arid Ecosystem Conservation in the Caucasus

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 1999–2002

**GEF Grant Financing:** \$750,000

Protection of biodiversity in the arid and semi-arid zone in Eastern Georgia is the objective of this project. The project is designed to ensure local land users' participation in the design of alternative land uses and their integration in its implementation. The project complements and enhances proposed protection activities in the target area and coordinates these with neighboring countries sharing sections of the ecosystem.

The project has gone through a biodiversity assessment and data collection phase. Socioeconomic data critical for

formulation of the two pilot projects within the project have been obtained and are being processed. Training and public awareness activities are being implemented in parallel. Special television footage has been prepared and is being broadcast as part of a regular series on UNDP activities in Georgia.

Additionally, technology transfer data and information needed for future analysis and formulation of strategic recommendations are being collected. (Implemented by the United Nations Development Programme.)

## GEORGIA

# Conservation of Forest Ecosystems

**Focal Area:** Biodiversity  
**Co-Financing:** \$24.10 million

**Project Dates:** 1998–2006

**GEF Grant Financing:** \$9.05 million

This project seeks to lessen the pressures on forests and their biodiversity from unsustainable human activities. Intensified use of Georgian forests has raised important environmental challenges related to soil and water conservation and projection of the region's globally significant biodiversity. Key project goals are to 1) establish effective protected areas, 2) improve management capabilities, and 3) strengthen institutions.

Accelerated timber harvesting, grazing, and game hunting threaten Georgia's diverse and abundant biodiversity. Recognizing the need for an integrated approach to the forest sector, Georgia has prepared a forest sector strategy as part of its National Environmental Action Plan. The current situation provides a window of opportunity to address

Georgia's natural resource management issues, particularly with regard to forestry management. Project support will help the government develop a national policy on forest classification, sustainable use, and protection. It will also build institutional capacity and mechanisms to better plan, implement, regulate, and monitor forestry operations at the field level. Additional resources will go to further plan, develop, and strengthen a representative protected area network, as well as strengthen and expand proposed protected areas in eastern Georgia.

Among key project benefits are 1) conserving globally important biodiversity in the Caucasus mountains and 2) improving opportunities for local people to generate alternative livelihoods. (Implemented by the World Bank.)

## GEORGIA Integrated Coastal Management Project

**Focal Area:** Biodiversity  
**Co-Financing:** \$6.80 million

**Project Dates:** 1998–2004

**GEF Grant Financing:** \$1.30 million

This project aimed to mitigate effects of human activities threatening Georgia's Black Sea coast. Key project goals are to 1) establish a legal and institutional framework for sustainable coastal development planning at the national and local levels, 2) protect critical wetland habitat and coastal biodiversity on Georgia's Black Sea coast, 3) monitor the coast's environmental quality, 4) identify cost-effective solutions for coastal erosion, and 5) plan response for oil spills.

This coastal region is experiencing acute environmental problems from uncontrolled pollution, coastal erosion, overfishing, introduction of exotic species, and offshore dumping. These problems also threaten the expansion of ports and tourism along the coast. Integrating sound environmental management into coastal development planning is therefore crucial. This project, implemented by Georgia's Ministry of Environment, is strengthening institutions to man-

age the coastal resources of the Black Sea in an environmentally and socially sustainable manner. Project support is helping Georgia implement priority actions in its biodiversity action plan: establishing a national park and nature reserve for the Kolkheti and Kobuleti wetlands, helping restore globally important natural resources in the Black Sea large marine ecosystem, and establishing a coastal environmental quality monitoring program and geographic information system.

Among the project's key benefits are 1) maintaining productive ecosystems and critical habitats in various waters, 2) conserving biodiversity and demonstrating sustainable natural resource use in and around the wetlands, 3) educating and engaging the public in Black Sea environmental issues and remedial actions, and 4) applying valuable lessons elsewhere in Georgia's coastal zone and larger Black Sea region. (Implemented by the World Bank.)

## GEORGIA Agricultural Development Project II

**Focal Area:** International Waters  
**Co-Financing:** \$5.75 million

**Project Dates:** 1999–2003

**GEF Grant Financing:** \$2.50 million

This three-phase project aims to increase agricultural production in a sustainable manner, while reducing pollution of natural resources caused by nutrients discharges to water bodies and greenhouse gas emissions. It represents the first phase of a 10-year program to reform on-farm agricultural and environmental practices. Under phase one, GEF supports the costs of implementing measures aimed at 1) improving on-farm environmental practices such as storage and management of manure water quality monitoring, which over the long term would reduce nutrients from entering the Black Sea; and 2) reducing greenhouse gases by promoting the use of biogas energy among rural households through technology demonstration and removal of institutional, ca-

capacity-related, marketing, and financial barriers to its more widespread use. The project scope of phases II and III remain to be determined, following a mid-term review of the project.

Key project benefits include 1) establishing an effective system for agricultural technology development, acquisition, and adaptation; 2) developing and transferring production and post-harvest technologies for natural resources management; 3) devising and implementing a strategy to reform the agricultural research complex; and 4) adopting improved sustainable agricultural practices to reduce environmental pollution. (Implemented by the World Bank.)

## Conservation and Sustainable Management of Dryland Biodiversity, Phase I

**Focal Area:** Biodiversity  
**Co-Financing:** \$1.80 million

**Project Dates:** 1999-2006

**GEF Grant Financing:** \$2.04 million

The Jessore Sloth Bear and Balaram-Ambaji Wildlife sanctuaries of north Gujarat, India, harbor unique assemblages of endemic and endangered fauna and flora, wild native crop varieties, and endemic medicinal plants. These sanctuaries are threatened by several factors, particularly from sanctuary inhabitants who depend on the biodiversity resources of the area. This project aims to promote the conservation of vulnerable, endangered, and endemic wild animals, medicinal plants, and wild varieties of important crops in the two sanctuaries. It will strengthen the sustainable use and management of silvi-horticulture systems, agrobiodiversity, and medicinal plants, among others, to promote alternative livelihood patterns and reduce resource pressures on the sanctuaries.

The project strategy is built on four objectives. The first is to conserve and augment critically endangered flora and fauna in the sanctuaries. The second is to reduce resource

pressures on the sanctuaries by developing sustainable alternative livelihood activities. The third is to improve the institutional and technical capacities of the sanctuary managers (the Forest Department) for biodiversity conservation; the fourth is to identify and initiate processes of change in order to overcome policy and institutional barriers hindering the sustainable management and conservation of the sanctuaries.

Project benefits include 1) strengthened conservation within core protected areas, 2) well-developed sustainable alternative livelihood activities that build upon indigenous knowledge systems and practices, 3) significantly improved institutional and technical capacities of the Forest Department, and 4) identified and significantly improved policy and institutional barriers to conservation and sustainable management of globally significant biodiversity in the sanctuaries. (Implemented by the United Nations Development Programme.)

## Conservation and Sustainable Use of the Gulf of Mannar Biosphere Reserve's Coastal Biodiversity

**Focal Area:** Biodiversity  
**Co-Financing:** \$19.09 million

**Project Dates:** 1999-2006

**GEF Grant Financing:** \$7.84 million

The biodiversity in Southern India's Gulf of Mannar Biosphere Reserve is principally threatened by habitat destruction, overharvesting of marine resources, and, to a lesser, more localized extent, civic pollution. The overall objective of this project is to conserve the Gulf of Mannar's globally significant coastal biodiversity and demonstrate how to integrate biodiversity conservation into coastal zone management plans.

To this end, the government will establish the Gulf of Mannar Biosphere Reserve Trust to ensure effective inter-sectoral coordination and facilitate mainstreaming of biodiversity conservation issues into the productive sector and policy development. An adaptive management approach will employ the results of targeted studies and monitoring to ensure appropriate adaptation of local-level resource use. The

end result will be adaptive, iterative, and participatory management of the reserve. The trust is an innovative mechanism that will allow project methodologies and results to be replicated for the rest of the coastal area of Tamil Nadu and demonstrate an institutional model for India as a whole.

Project benefits include 1) strengthened park management and attendant biodiversity conserved through traditional protected area and improved coastal zone management in the buffer zone, 2) sustainable livelihoods established through the modification of existing nonsustainable activities in the buffer zone, 3) full participation of communities in park management, and 4) technical and administrative staff of local and national institutions trained in integrated coastal area management. (Implemented by the United Nations Development Programme.)

## INDIA Ecodevelopment

**Focal Area:** Biodiversity  
**Co-Financing:** \$54.00 million

**Project Dates:** 1995–2002

**GEF Grant Financing:** \$20.21 million

Ecodevelopment works to improve protected area management (PAM) as well as involve local people. This project has five objectives in seven protected areas and environs: to improve the capacity of protected area managers to conserve biodiversity and increase opportunities for local participation in PAM activities and decisions, reduce negative impacts of local people on biodiversity and of protected areas on local people and increase collaboration of local people in conservation efforts, develop more effective and extensive support for ecodevelopment of protected areas, ensure effective management of this project, and prepare future biodiversity projects.

The project is working to improve PAM by strengthening management plans and incorporating protected area concerns into regional planning and regulation. The project is restoring ecosystems and habitats and improving fire, poaching, and animal control at various protected areas. It is using

participatory rural appraisal techniques to facilitate village planning of activities to mitigate the negative impacts of protected areas on local people. The project pays special attention to involving women, tribal groups, and other disadvantaged people. Local NGOs are receiving the help of expert advisors, training, workshops, physical facilities, equipment, and materials to promote environmental education and awareness and to manage visitors and other aspects of ecotourism.

Project benefits include 1) conserving globally significant biodiversity; 2) developing capacity for increased conservation in the future; 3) slowing, halting, or reversing the negative environmental impacts of local people on biodiversity and threats to ecosystems and species and increasing local support for protected areas; and 4) providing models for use elsewhere in India. (Implemented by the World Bank.)

## INDIA Alternate Energy

**Focal Area:** Climate Change  
**Co-Financing:** \$160.00 million

**Project Dates:** 1991–2001

**GEF Grant Financing:** \$26.00 million

India is striving to create commercial markets for alternative energy technologies. To support this goal, the present project was designed to: 1) increase the Indian Renewable Energy Development Agency's (IREDA's) ability to mobilize private investment in the renewable energy sector, 2) demonstrate the ability of wind and photovoltaic technologies to generate both grid-integrated and decentralized power efficiently and on a scale sufficient to support local joint venture manufacturing, 3) use prudent subsidies to expand the use of photovoltaic technologies in the household lighting market and establish a sustainable commercial market for these technologies, 4) pioneer new financing and market delivery systems using private sector intermediaries to overcome nonmarket barriers, and 5) serve as a model to increase consumer confidence in alternative energy technologies and

catalyze the development of a mass market for them within India and abroad.

Under the auspices of this project, IREDA has undertaken a marketing program for deploying 2.5 to 3.0 megawatts of capacity generated by solar photovoltaic systems. The project provided technical assistance and training to support IREDA in the areas of project lending, marketing, technology, project review, and entrepreneurial promotion.

Project benefits include 1) demonstrating alternative energy-generation technologies on a commercial scale to India and the world; 2) attracting more private investment to India's nonconventional energy sector; 3) reducing the use of fossil fuels and concomitant emission of greenhouse gases; and 4) providing a reliable, cost-effective power supply, helping to meet industrial and rural energy needs. (Implemented by the World Bank.)

## INDIA

# Biomass Energy for Rural India

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 1999–

**GEF Grant Financing:** \$4.21 million

This project focuses on providing decentralized, high-quality rural energy services critical to the promotion of development and quality of life—specifically, electricity for lighting and shaft power, drinking water supply, heat for cooking, irrigation water supply, and milling. The project proposes to improve the quality of life of women, in particular, by providing biogas for cooking, electricity for piped water supply, and home lighting to all the households in two *panchayats*, which comprise a cluster of 24 villages. Some 2,000 farmers will also benefit through irrigation projects, while entrepreneurs will reap benefits from opportunities in service activities such as installation, operation, maintenance, and training. The aim is to promote a sustainable and participatory approach to meeting rural energy needs.

Project activities address technology package standard-

ization, system demonstration and proof of concept, capacity and institutional building, enabling activities, information package generation and dissemination, and financial barrier removal and creation of an investment risk fund.

Project benefits include 1) at the global level, zero or negative net carbon dioxide emissions through sustainable supply of bioenergy, carbon sequestration in degraded lands through forestry options, and reduced carbon dioxide emissions as fossil fuels are substituted with bioenergy; and 2) at the local level, removal of key barriers to rural biomass energy use and widespread replication of their applications, growing local business in small-scale biomass applications, and increased supply of power and cooking fuels from indigenous fuels. (Implemented by the United Nations Development Programme.)

## INDIA

# Coalbed Methane Capture and Commercial Utilization

**Focal Area:** Climate Change  
**Co-Financing:** \$10.04 million

**Project Dates:** 1997–2003

**GEF Grant Financing:** \$9.19 million

This project addresses two major issues that have prevented adoption of measures to drain, recover, and use methane effectively during mining: 1) methane released during mining is often seen as a security hazard and a low-valued resource, and 2) there is a lack of technical know-how in harnessing coal mine gas during and after underground mining. The project is using advanced drainage technology from strata that release methane to optimize methods of locating and designing underground methane drainage potential. It is also working to demonstrate the feasibility of using methane near sources of coalbed methane.

Project activities address strengthening and increasing capacity of relevant government ministries, organizations, and research institutes to develop and support coalbed methane projects. Demonstration projects are being prepared and executed at the Moonidih and Sudamdih coal mines for re-

covery and use of coalbed methane using three different drilling technologies. The gas recovered is then being used for vehicle refueling and electric power generation. The project is developing and adopting an action plan to replicate successful aspects of these demonstrations, as well as disseminating information and educating, promoting, and facilitating interaction with potential foreign investors through a coalbed methane information clearinghouse.

Project benefits include 1) greenhouse gas emissions reduced, 2) widespread replication of methane recovery techniques in gassy mines encouraged, 3) in-country capacity built to expand methane recovery and use, 4) increased coal mining production and safety, and 5) reduced electricity shortages in local mining communities and improved local air quality. (Implemented by the United Nations Development Programme.)

## INDIA

# Cost-Effective Options for Limiting Greenhouse Gas Emissions

**Focal Area:** Climate Change

**Project Dates:** 1998–2000

**GEF Grant Financing:** \$1.50 million

**Co-Financing:** None

A number of barriers have slowed the introduction of cost-effective, clean, efficient, and renewable technologies in India that would limit the growth of greenhouse gas emissions. These barriers include the absence of well-formulated, cost-effective projects and initiatives for climate change mitigation and the lack of capacity to analyze, evaluate, and formulate climate mitigation projects, programs, and initiatives. This project sought to address this gap by ensuring that India has the institutional capacity it needs to formulate climate mitigation projects that are cost effective and part of a well-articulated plan, reflecting input from within and outside government, including the private sector. The project emphasized developing markets for environment-friendly technologies, supported by capacity building and networking of national institutions and agencies. Training and study tours exposed policymakers and managers to the best market-oriented prac-

tices for introducing and commercializing efficient, renewable, and cost-effective technologies that are both appropriate to the local environment and help reduce GHG emissions.

The project had three objectives: 1) to develop institutional capacity for prioritization of cost-effective options for different sectors; 2) using this capacity, to analyze, evaluate, and formulate cost-effective climate change projects and initiatives; and 3) to establish a forum for continual consultation with national and international and other donors.

Project benefits include 1) reduced GHG emissions; 2) conservation of forests and biodiversity, improved watershed management, and other environmental benefits; 3) strengthened government ministries and departments as well as participating institutions; and 4) energy and other savings to benefit industry and other businesses. (Implemented by the United Nations Development Programme.)

## INDIA

# Development of High Rate Biomethanation Processes as Means of Reducing Greenhouse Gas Emissions

**Focal Area:** Climate Change

**Project Dates:** 1992–2000

**GEF Grant Financing:** \$5.05 million

**Co-Financing:** None

This project enabled the Indian Ministry of Nonconventional Energy Sources to develop the institutional framework needed to support a national bioenergy program focusing on high-rate biomethanation of additional wastes. By constructing and operating prototype demonstration plants, the project demonstrated the value of high-rate biomethanation and creating interest in its replication by private and public investors.

The project began by developing a national master plan that included several investment proposals for the high-rate biomethanation treatment of municipal, industrial, and agricultural wastes. An integral part of the plan was reducing the discharge of these untreated wastes, thereby improving the quality of the environment, sanitation, drinking water, and public health in India. The project looked to develop expertise in universities, research and development organizations,

and consulting firms to assimilate the technology and provide assistance in constructing biomethanation plants. A National Bioenergy Board was established and supported by a network of professionals in national laboratories, institutes, and other agencies. The project included several demonstration units to establish the technological and economic viability of high-rate biomethanation using various substrates.

Project benefits include 1) reduced emissions of a major greenhouse gas; 2) improvement of air and water quality at the local level; 3) access for local communities to a valuable new source of energy; 4) enhanced quality of life for rural women by substituting methane fuel for firewood; and 5) sustainability of benefits by making the technology an attractive investment for private, public, and municipal financing sources. (Implemented by the United Nations Development Programme.)

## INDIA

# Energy Efficiency

**Focal Area:** Climate Change

**Project Dates:** 1998–2006

**GEF Grant Financing:** \$5.00 million

**Co-Financing:** \$32.00 million

This project supports government initiatives to reduce power supply shortages and greenhouse gas emissions through environmentally sustainable investments in small-scale power generation by tapping the country's vast hydro resources and supporting renewable energy development programs launched by the states. In addition, the project will strengthen the national energy-efficiency program by providing capital for energy-efficiency services, equipment, and devices and by promoting business arrangements that reduce transaction costs and risks. It aims to improve domestic capacity to promote and implement private sector initiatives in energy efficiency; mitigate the costs and risks of developing and investing in smaller projects; disseminate information on best practices in implementing energy-efficiency services, technologies, and cost-recovery mechanisms; and provide medium-term loan and lease facilities.

The project has a small hydro component that will finance 200 megawatts of small hydro investments by the private sector. Its energy-efficiency component will finance investments for integrated energy management services operated by energy service companies and end users, purchase and installation of energy-efficiency and/or load management devices and systems, production of energy-efficiency equipment, and end-user participation in utility-sponsored demand-side management programs. The project also encompasses a technical assistance component.

Project benefits include 1) energy conservation, which, in turn, will directly reduce GHG emissions; 2) augmentation of the power supply to meet growing demand; and 3) stimulation of the development of an energy services market in the private sector and enhanced understanding of risks and benefits of energy business transactions. (Implemented by the World Bank.)

## INDIA

# Fuel Cell Bus Development in India (Phase II, Part 1)

**Focal Area:** Climate Change

**Project Dates:**

**GEF Grant Financing:** \$6.28 million

**Co-Financing:** \$5.84 million

This project involves a five-year demonstration program of operating and testing eight fuel-cell buses (FCBs) for public transport in Delhi. The major objective is to introduce this zero-emission and highly efficient bus technology in India for reducing local air pollution and global greenhouse gas emissions. It will help the Indian transport sector gain capability in manufacturing, operating, and servicing FCBs under local conditions. It will also help create an initial volume demand and provide useful feedback for FCB developers/manufacturers to further improve bus design and reduce bus cost.

The overall program consists of four phases. Phase I—the study leading to this demonstration effort—has been successfully completed. Phase II is further broken down into two implementation segments of one year (the present part) and four years (part 2) duration. In the next phase, the demonstration project will be extended for an additional two to

three years, if successful; e.g., 20 more FCBs could be purchased at the end of the demonstration project to increase the fleet size from 8 to 28 buses. The final program phase is expected to begin by 2009–10 and involves the initial commercialization of the FCBs. By this time, a tax credit or soft loan provided by the government should be able to entice local bus manufactures to launch commercial production.

Project benefits of this specific part of phase II include 1) installation of eight FCBs, as well as a packaged electrolyzer unit, including high-pressure hydrogen gas storage cylinders, hydrogen compressors, and dispensers at the host bus depot; 2) verification of the performance, operability, reliability, and safety of the FCBs and hydrogen facility (production, compression, storage, and dispensing); and 3) local operation/maintenance capability of the FCBs and hydrogen facility. (Implemented by the United Nations Development Programme.)

## INDIA

# Optimizing Development of Small Hydel Resources in Hilly Areas

**Focal Area:** Climate Change  
**Co-Financing:** \$7.50 million

**Project Dates:** 1991–1999

**GEF Grant Financing:** \$7.50 million

Many of the residents of the Himalayan and sub-Himalayan region of India, which consists of 400,000 square kilometers of towering mountain ranges and extensive hilly areas, live below the poverty line and do not have access to electricity. The Ministry of Nonconventional Energy Sources (MNES) proposed this project as part of its overall strategy to enhance nonconventional and renewable energy sources in cooperation with local government, electricity boards, entrepreneurs, NGOs, technical institutions, and others. MNES wanted small hydel power to provide as much as 600 megawatts per year.

To demonstrate the viability and benefits of small hydel projects in hilly regions, the project worked to construct 20 small demonstration projects at various sites using economical but state-of-the-art technologies for replication on a major scale throughout the hilly regions of India. It prepared a

national strategy and master plan with detailed investment proposals on developing small hydel projects based on the demonstration efforts. It delivered the energy produced to communities around each project using existing transmission lines; and developed management and ownership models for village-level elected bodies, cooperatives, NGOs, citizen groups, and others. The project also upgraded 100 water mills to generate electricity, using such technology as add-on multipurpose devices, to serve as prototypes in different regions.

Project benefits include 1) reduced fossil fuel use, land required for agriculture, and greenhouse gas emissions while protecting forests and biodiversity; 2) enhanced local economic opportunities; and 3) capacity building within MNES, NGOs, technical institutions, local agencies, and government. (Implemented by the United Nations Development Programme.)

## INDIA

# Solar Thermal-Electric

**Focal Area:** Climate Change  
**Co-Financing:** \$196.00 million

**Project Dates:** 1996–

**GEF Grant Financing:** \$49.00 million

This project is working to demonstrate the operational viability of parabolic trough solar thermal power generation in India, promote the commercial development of solar thermal technology and cost reduction, and help reduce greenhouse gas emissions in the short and long terms. Specifically, the project will demonstrate operation of a solar thermal plant by an independent power producer with commercial power sales and delivery arrangements with the grid. The project supports technology development through technical assistance and training. The initiative is seen as the first step in a long-term program promoting solar thermal power in India and around the world.

The project consists of two components, one involving investment; the second, technical assistance. The first component involves construction by the private sector of a solar

thermal/fossil fuel hybrid power plant of about 140 megawatts, incorporating a parabolic trough solar thermal field of 35 to 40 megawatts. The planned power station comprises a solar field supporting a 35- to 40-megawatt electric solar thermal plant and a power block based on mature fossil fuel technology. The second component involves the provision of technical assistance to ensure that adequate institutional and logistic support for solar technology is available for future expansion of solar thermal power. Funds support a variety of activities, including promoting these technologies among potential investors, improving operation and maintenance, staff training, and development of a cadre of local consultants.

Project benefits include the reduction of GHG emissions from fossil fuel use, avoiding emissions of as much as 3.1 million tons of carbon. (Implemented by the World Bank.)

## INDONESIA

# Biodiversity Collections

**Focal Area:** Biodiversity  
**Co-Financing:** \$4.20 million

**Project Dates:** 1992–2001

**GEF Grant Financing:** \$7.20 million

Indonesia covers only 1.3 percent of the world's surface but supports 10 percent of the world's remaining closed tropical forests as well as rich coastal and marine habitats. The goals of this project are to rehabilitate Indonesia's extensive biological collections, enhance international biological information exchange, and strengthen and build local institutional capacity in this area.

To achieve these goals, the project is helping Indonesian scientists inventory, monitor, and catalogue the country's biological resources. It is providing resources to rehabilitate existing collections and to train national systematists and technicians. It also is helping Indonesian scientists access existing biological information outside the country by strengthening the exchange of expertise with herbaria and zoologi-

cal museums in Europe, North America, and Australia. All information is to be entered on computer databases that allow easy access and dissemination of pivotal new information on biodiversity.

Project benefits include 1) vast improvement of the availability of information on Indonesia's genetic resources for research, conservation, natural resource management, spatial planning, environmental assessment, and commercial applications; 2) provision of a model of strategic and institutional transformation for similar organizations in both developing and developed countries; 3) fostering of scientific collaboration and research; 4) improved physical condition of specimens; and 5) the development of user products and services. (Implemented by the World Bank.)

## INDONESIA

# Conservation of Elephant Landscapes in Aceh

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 1999–

**GEF Grant Financing:** \$740,000

This project aims to conserve globally important biodiversity in the forests of Northern Aceh by using Asian elephant populations as flagships and indicators. The forests of Northern Aceh are comparatively unknown in biological terms due to the lack of any systematic surveys. They likely contain a similar biota to that recorded in Gunung Leuser National Park, in Southern Aceh, which has 65 percent of Sumatra's 129 mammal species; 80 percent of its 483 bird species, including all those on the Red List; and thousands of species of trees and plants. Through this project, understanding of and support and capacity for the conservation of Northern Aceh's remaining forests will be increased. Consequently, the current loss and fragmentation of forest will be reduced, and sustainable use of Aceh's natural resources actively encouraged.

The project is identifying critical areas of Aceh's forests in terms of biodiversity, and the distribution and movements of rainforest elephants, and then working to increase the protective measures these areas are afforded. It is building local capacity within project staff and partner organizations, identifying threats to the forest ecosystem, and actively encouraging enhanced conservation activities and more beneficial spatial planning.

Project benefits include 1) official recognition and more effective protection of critical forest areas, 2) increased capacity for conservation and sustainable use among local communities and policymakers, 3) improved policy framework for forest conservation, 4) strong stakeholder support for and participation in the project, and 5) ongoing evaluation and dissemination of project results and effectiveness. (Implemented by the World Bank.)

**INDONESIA**  
**Coral Reef Rehabilitation and Management Project**

**Focal Area:** Biodiversity  
**Co-Financing:** \$48.00 million

**Project Dates:** 1997–2013

**GEF Grant Financing:** \$12.28 million

Concern for its coral reefs prompted the government of Indonesia to formulate the Coral Reef Rehabilitation and Management Program, which will be implemented over 15 years in three phases. This project will improve management of priority sites and rehabilitate degraded coral reefs using community-based interventions, research, capacity building, and awareness raising. The project focuses on eastern Indonesia, which is believed to contain the richest coral reef, fish, and marine invertebrate biodiversity in the world.

One set of project activities addresses the management of priority coral reef sites; this involves a process of intersectoral and participatory planning with relevant government agencies, the private sector, NGOs, and local communities to identify viable solutions for improving management of priority coral reef sites, facilitate their implementation by communities, and address their socioeconomic needs. The project

is also establishing a Coral Reef Information Network, a network of information centers, linked to regional universities, that will undertake inventory, research, and monitoring of coral reef status and provide public information and guidelines on reef status and management. Another project component addresses human resource capacity building; it includes strategic education and training programs, on-the-job skill development, seminars, and workshops. The project is also conducting a public awareness and participation program.

Project benefits include 1) arresting the degradation of coral reef habitats in selected sites and protecting biodiverse marine areas, 2) increasing sustainable yields of coral-related fisheries and preserving the recreational value of marine tourism sites, and 3) improving income-generating opportunities for poor coastal villages. (Implemented by the World Bank.)

**INDONESIA**  
**The Greater Berbak-Sembilang Integrated Coastal Wetlands Conservation Project**

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 2000–

**GEF Grant Financing:** \$730,000

The goal of this project is to conserve the biodiversity and threatened wetland habitats of the Greater Berbak-Sembilang Ecosystem. Its specific objective is to support an integrated conservation and development approach to the management of Berbak and Sembilang National Parks and ensure the public support needed to maintain the ecosystem.

To achieve its objective, the project is performing a series of activities in spatial planning, assessment, and monitoring. These include conducting rapid assessment surveys to collect baseline data to supplement the Berbak management plan and collecting baseline biological, socioeconomic, and land use conflict data to plan the proposed national park for Sembilang. The project will next work to establish, and subsequently to manage, a national park at Sembilang. It will strengthen the management of Berbak through, among other activities, the upgrading of its ranger posts and provi-

sion of additional equipment for park management and patrolling. A final set of project activities addresses capacity building and environmental awareness with regard to NGOs, educators, and the public at large.

Project benefits include 1) development and implementation of a detailed management framework and spatial plan based on biological/conservation values and socioeconomic realities, 2) an expanded national park system, 3) maintenance of a forest buffer zone and corridor between the Berbak and Sembilang conservation areas, 4) strengthened capacity for conservation management and capacity building in conservation planning and support for park management for other government agencies and NGOs, 5) interprovincial collaboration for conservation, and 6) a strong local constituency for conservation. (Implemented by the World Bank.)

## INDONESIA

# Maluku Conservation and Natural Resources Management

**Focal Area:** Biodiversity  
**Co-Financing:** \$4.60 million

**Project Dates:** 1999–2004

**GEF Grant Financing:** \$6.00 million

This project addresses conservation and sustainable use activities in four biologically rich sites covering forest, mountain, and coastal/marine ecosystems in the province of Maluku in eastern Indonesia. Home to a rich mixture of flora, fauna, and marine species, Maluku has just one terrestrial and one marine protected area, which are poorly managed and under threat. This project is addressing these threats by strengthening management of the existing terrestrial protected area (Manusela National Park) and establishing a second area (Lolabata-Akitajawe National Park). It is also expanding and managing a system of marine protected areas around the Aru and Banda Islands. These protected areas will provide comprehensive coverage of the region's globally important biodiversity.

The project is encouraging local communities to support conservation and adopt more ecologically sustainable

use practices by providing development grants in return for pro-environmental activities and by reviving traditional natural resource management systems. It is also promoting community, NGO, and private sector involvement in ecotourism development and protected area planning and management. Other project activities are aimed at enhancing environmental awareness; the project also includes biodiversity monitoring and evaluation activities.

Project benefits include 1) efficient use and distribution of block grants for poverty reduction; 2) innovative public-private partnership for management of protected areas; 3) efficient, functioning system of protected areas; 4) improved monitoring of ecosystem health and protection of endangered species; and 5) enhanced local awareness of and support for nature conservation. (Implemented by the World Bank.)

## INDONESIA

# Solar Home Systems

**Focal Area:** Climate Change  
**Co-Financing:** \$93.80 million

**Project Dates:** 1995–2002

**GEF Grant Financing:** \$24.30 million

This project is working to commercialize solar photovoltaic home systems in Indonesian rural areas and catalyze market acceptance of solar home systems as part of a least-cost rural electrification strategy that relies on private sector delivery and installation. The intent is to create a sufficiently large market for solar home systems to accelerate wide-scale purchase of these systems and broaden product offerings. The project is supporting installation of about 200,000 such systems in up to four regional markets, focusing on areas too remote to connect to existing electrical power grids but reasonably close to urban centers. The project is also developing a strategy and action plan to meet the energy needs of rural populations for whom solar home systems are the least costly alternative. The project is working to strengthen the capacity of the Indonesian Agency for the Assessment and Application of Technology to promote solar home systems.

Project activities are aimed at enabling rural purchase of low-cost solar systems on an installment plan. The project is providing technical assistance, developing policies in the form of a strategy and action plan, and strengthening the Indonesian Agency for the Assessment and Application of Technology's testing and certification capabilities for solar home systems.

Project benefits include 1) mitigation of greenhouse gas emissions and provision of electricity to many rural residents who now do without, 2) involvement of the private sector in commercializing renewable energy, 3) promotion of environmentally sound energy resource development, and 4) strengthening of national capacity to support decentralized rural electrification through solar photovoltaics. (Implemented by the World Bank.)

**INDONESIA**  
**West Java/Jakarta Environmental Management Project**

**Focal Area:** Climate Change  
**Co-Financing:** \$17.00 million

**Project Dates:** 2000–

**GEF Grant Financing:** \$10.00 million

Indonesia's urban areas generate 55,000 tonnes of solid waste per day. Waste disposal is among the worst in the Asian region. Only 50 to 60 percent of the waste is collected, and most landfill sites are open dumps. Service is even worse in poor areas, where most waste is dumped in canals or vacant lots, or burned. Poor solid waste management degrades local waterways and is the largest source of particulate air pollution in urban areas. It is a major contributor to respiratory ailments, diseases such as Dengue Fever, and localized flooding. Anaerobic waste decomposition in landfills and water courses is also a significant source of greenhouse gas emissions. This project aims to improve waste management and other environmental aspects of this region's urban areas. Its objectives are to lay the institutional and community foundation for sustainable environmental waste management among the participating local and provincial governments,

prepare detailed designs for the investments to be implemented mostly during the subsequent two phases, and help reduce GHG emissions by establishing commercial-scale compost production.

The project will pilot an innovative, environmentally sound, and potentially cost-effective alternative method of organic waste management. This method will separate organic waste and convert it to compost by a process of aerobic decomposition. The compost will be sold to farmers as a soil enrichment product.

Project benefits include 1) avoiding the production of methane gas through the diversion of organic waste from landfills, 2) cost-effective reduction of Indonesia's GHG emissions, and 3) provision of a model system for replication in other Indonesian cities and developing countries. (Implemented by the World Bank.)

**INDONESIA**  
**Emergency Response Measure to Combat Fires in Indonesia and to Prevent Regional Haze in Southeast Asia**

**Focal Area:** Multiple Focal Areas  
**Co-Financing:** \$100,000

**Project Dates:** 1998–1999

**GEF Grant Financing:** \$750,000

In 1997 forest fires set to clear land in Indonesia spread over a large area of land already dry from drought. The seriousness of the fires in terms of scale, affected areas, and duration was unprecedented in the region. This project aimed to provide a comprehensive analysis of the causes of the fires and their environmental and socioeconomic impacts. The project also recommended possible future actions. Its objective was to mobilize a regional effort to develop a strategy to prevent and combat forest fires in ASEAN countries.

Project activities were aimed at raising national, regional, and global public awareness of the danger of forest fires, and increasing global concern and interest in recent forest fire disasters. The project also coordinated all existing efforts in the region and made the best use of existing aid in order to organize a more concerted effort to combat the fires.

A meeting of experts was convened that included senior government officials to develop a strategy to prevent and combat forest fires in the Southeast Asian region; this was to include state-of-the-art forest firefighting technology and an early forest fire warning system. The project then looked to build capacity for implementing the strategy developed by these experts.

Project benefits include 1) protecting biodiversity in certain valuable forest ecosystems, 2) preventing greenhouse gas emissions due to forest fires and associated haze, 3) preventing pollution of international waters, and 4) enhancing ASEAN capability to prevent or contain future outbreaks of fire. (Implemented by the United Nations Environment Programme.)

## IRAN

# Conservation of the Asiatic Cheetah, Its Natural Habitat, and Associated Biota

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 2000–

**GEF Grant Financing:** \$750,000

The goal of this project is conservation of the Asiatic cheetah in Iran and of the related complex of rare and endangered wild species and their natural habitats. An important strategic element is the involvement of a variety of stakeholders in collaborative management processes at the local level, beginning with the resident and nomadic communities and local representatives of the Department of the Environment. The project aims to couple environmental responsibilities (via management plans) and socioeconomic benefits related to support for cheetah conservation for all persons involved. At the national level, the project's emphasis is on improved national policies and on a social communication campaign to enhance ecological awareness and awareness of biodiversity-related benefits among key groups (e.g., peri-desert communities, nomadic herders, hunters, youth).

Project activities include the identification of at least four

crucial biotic territories for the cheetah by gathering, analyzing, and monitoring data on the cheetah, its population dynamics, behavior, survival factors, habitat and related biota, and principal prey species. The project will promote and support collaborative management processes in these biotic territories to ensure involvement of key stakeholders. A national action plan and social communication campaign will also be developed.

Project benefits include 1) better understanding of the cheetah and its habitat, 2) improved management of crucial biotic territories to rehabilitate overgrazed habitat and ensure better protection for cheetahs and their prey, 3) enhanced sustainable well-being of the human communities living within or in proximity of such natural habitats, and 4) enhanced awareness and support of government and civil society on relevant issues and concerns. (Implemented by the United Nations Development Programme.)

## IRAN

# Carbon Sequestration in the Desertified Rangelands of Hossien Abad, South Khorasan, through Community-based Management

**Focal Area:** Climate Change  
**Co-Financing:** \$960,000

**Project Dates:**

**GEF Grant Financing:** \$750,000

The goal of this project is to increase organic carbon sequestration in plant biomass and soils, and to increase ground cover in threatened dryland and arid sites. Its objectives are to promote sustainable community-based management of rangelands, provide enabling conditions for carbon storage and flora enhancement, enhance human resource development at the national and local levels, and provide sustainable ecosystems. By introducing biomass species, the microclimate is improved, and grasses and shrubs return, thus enhancing flora and fauna populations. These areas could store an estimated 1 billion tonnes of organic carbon if they can be reclaimed and managed properly, and would yield an annual production of about 18 million tonnes of fodder and about 60 million tonnes of woody biomass that could be used for building/construction and as a renewable source of energy.

Project activities include planting and reseeding at least 9,000 hectares in five blocks with various woody and nonwoody species, with the woody component providing about 80 percent of the cover. Other activities focus on regeneration, establishment (including watering), and protection of plantings; land use management; training and extension, public awareness; marketing; and monitoring and evaluation.

Project benefits include 1) enhanced carbon storage; 2) improved flora and fauna numbers and composition; 3) improved capacity of national experts and local people in rehabilitation, management, and use of resources on degraded lands through participation and training in nursery work, establishment, maintenance, management, and produce marketing; and 4) improved environmental and economic conditions. (Implemented by the United Nations Development Programme.)

## Teheran Transport Emissions Reduction

**Focal Area:** Climate Change  
**Co-Financing:** \$2.00 million

**Project Dates:** 1992–1997

**GEF Grant Financing:** \$2.00 million

The goal of this project was to assess measures that would best reduce greenhouse gas emissions and pollutants from vehicular traffic. Tehran authorities assessed such measures as efficient pricing of inputs and urban transport services that reduce GHG emissions from vehicular traffic while improving local air quality. The project identified a variety of measures to achieve target air quality improvement that reduced both GHGs and air pollution at the lowest cost. The information is assisting decisionmakers in designing a program of local air pollution abatement that also cost effectively addresses contributions to climate change.

The project installed properly functioning emission monitoring equipment around Tehran. Data collection and analysis were then conducted. An international conference on air pollution in Tehran attracted 1,400 people, mostly from Iranian ministries, governmental organizations, and universi-

ties. Discussions covered many topics relevant to the project, including emission inventories; urban planning; vehicle fleet, fuels, traffic, and transportation management; air quality modeling; and action plans for reducing air pollution.

Upon the project's successful completion, the municipality of Tehran committed itself to implementing the consultants' major recommendations. It also instructed Air Quality Control Company, a municipal subsidiary, to take measures to execute remaining and continuing operations of the implementation plan.

Project benefits include 1) development of an action plan to substantially improve air quality, reduce GHG emissions, improve residents' health, save energy, improve traffic safety, and increase traffic system reliability; and 2) implementation of urban transport policies that are environmentally sustainable, both locally and globally. (Implemented by the World Bank.)

## KAZAKHSTAN

## Integrated Conservation of Migratory Bird Wetland Habitat

**Focal Area:** Biodiversity  
**Co-Financing:** \$29.56 million

**Project Dates:** 2000–

**GEF Grant Financing:** \$8.85 million

In Kazakhstan, social and economic reforms present new challenges and opportunities for wetland conservation. Protected areas require a reorientation in management, strengthened financing mechanisms, and new relationships with the stakeholders living near these areas. A lack of experience in how to meet such challenges in recent years has resulted in the neglect and unsustainable use of Kazakhstan's globally significant wetland areas and attendant biodiversity. Development and testing of new water and land property rights provide an opportunity to integrate the country's sustainable land and water resource management regimes. This project is designed to demonstrate the integrated conservation and sustainable use of biological diver-

sity in three priority wetland sites, which lie along different migratory flyways. The primary project goal is to demonstrate solutions to various pressing issues affecting Kazakhstan's wetland biodiversity resources.

Key project benefits include 1) establishing a national, integrated, and institutional policy and regulatory framework for wetland biodiversity conservation and management; 2) strengthening protected area operations in three protected wetland sites; 3) increasing stakeholder awareness and support; 4) empowering stakeholders to make sustainable use of productive landscapes around priority sites; and 5) setting up a Migratory Bird Wetland Conservation Fund. (Implemented by the United Nations Development Programme.)

## KAZAKHSTAN

# Wind Power Market Development Initiative

**Focal Area:** Climate Change  
**Co-Financing:** \$4.84 million

**Project Dates:** 1998

**GEF Grant Financing:** \$2.90 million

This project aimed to reduce large-scale greenhouse gas emissions in Kazakhstan, one of the world's largest emitters of energy-related carbon dioxide. Key project goals were to 1) remove existing barriers to and reduce implementation costs of wind energy projects, 2) promote development of the wind energy market in Kazakhstan, and 3) reduce greenhouse gas emissions.

Kazakhstan relies mostly on cheap domestic coal and other fossil fuels as primary energy sources, which helps make it the largest emitter of greenhouse gases in Central Asia. This project, known as the Wind Power Market Development Initiative, is meant to promote development of the wind energy market in Kazakhstan. The Ministry of Natural Resources and Environmental Protection of Kazakhstan serves as the coordinating body for this cross-sectoral pro-

gram, while a management unit handles day-to-day coordination and supervises activities. The project focuses on raising awareness, increasing information and capacity, and removing financial and institutional barriers, to promote development of wind power energy in Kazakhstan.

Project benefits include 1) providing numerous energy services, 2) alleviating an electricity deficit and insecure power supply, 3) availing the region with local consultant companies and community organizations offering wind energy expertise and services, 4) fostering local industry's potential to manufacture selected wind farm components, and 5) improving the living standards of the local population through new employment opportunities. (Implemented by the United Nations Development Programme.)

## KAZAKHSTAN

# Program for Phasing out Ozone Depleting Substances

**Focal Area:** Ozone Depletion  
**Co-Financing:** \$760,000

**Project Dates:** 2000-

**GEF Grant Financing:** \$5.60 million

This project aims to assist Kazakhstan in the rapid phase-out of ozone depleting substances, consistent with international efforts in this area. The primary project goal is to ensure country compliance with the Montreal Protocol, which requires Kazakhstan to phase out consumption of ozone depleting substances in a timely manner. The project targets priority phase-out activities in the refrigeration sector and proposes technical assistance at the institutional and enterprise levels to facilitate implementation of the country program.

This project is formulated as a framework project comprising several subprojects designed to institute recovery and recycling for refrigerants, eliminate ozone depleting substances in both the rigid and flexible foam sectors, eliminate

CFC-113 in a solvent production facility, implement a national Halon management stockpile program, and conduct five technical assistance and training components. The project is designed in full conformity with relevant GEF policies on cost-effectiveness, exports, ownership, financing, operational costs, and financial viability as required by the GEF Operational Strategy.

Anticipated project benefits include 1) helping Kazakhstan to meet its phase-out obligations under the Montreal Protocol within a realistic time frame and 2) ensuring availability of technical assistance to expedite the implementation of its country program. (Implemented by the United Nations Development Programme and the United Nations Environment Programme.)

## KOREA DPR

# Conservation of Biodiversity at Mount Myohyang

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 2000–2003	<b>GEF Grant Financing:</b> \$750,000
<b>Co-Financing:</b> None		

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This project aims to protect biodiversity in Mount Myohyang in central Korea by initiating a protected area management scheme that focuses on biodiversity conservation. This area has been designated a protected area since 1954; however, the notion of biodiversity conservation is new to most people who manage and visit the area. As a result, resources are not fully targeted toward best biodiversity conservation measures. Moreover, the park has no buffer zone.

The specific factors threatening Mount Myohyang's globally significant biodiversity are information failure and institutional and management deficiency. To address these problems, the project is developing information systems; these are based on surveys and information gathering, and threats analysis and recommendations. It is also developing strategic outreach plans that encompass alternatives to resource overharvesting pressures and rely on education and inter-

pretation. It is strengthening measures to protect biodiversity, including demarcation of a buffer zone, and the design and implementation of land and resource use regulations for the buffer. It is also strengthening the relevant institutional and policy base, clarifying the roles of provincial authorities and other stakeholders and strengthening enforcement measures. Other project activities are dedicated to building management capacity, improving human resources, and preparing and implementing a protected areas management plan.

Project benefits include 1) elevating Mount Myohyang as a protected area to the caliber of IUCN category II, 2) dissemination of project achievements to all protected areas in Korea, 3) increased species diversity and habitat range over levels measured by baseline surveys, and 4) pressure on biodiversity resources reduced from baseline levels by 50 percent. (Implemented by the United Nations Development Programme.)

## LAO PDR

# Wildlife and Protected Areas Conservation

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1991–1999	<b>GEF Grant Financing:</b> \$5.00 million
<b>Co-Financing:</b> \$15.30 million		

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Forest cover in Laos PDR is steadily decreasing; it dropped by about 1 percent a year between 1940 and 1981. A combination of shifting cultivation, forest fires, illicit logging, unsustainable commercial exploitation, and destructive logging practices is degrading forests. Loss of Laotian forests means loss of a rich diversity of ecosystems and species, now estimated at 10,000 species of plants and animals. The goal of this project is to develop capacity to protect biodiversity, establish four new protected areas, and involve local communities in protected area management. Specific project objectives are to protect biological diversity by developing human resources and strengthening institutions; designate, establish, and manage priority protected areas and associated wildlife; and plan and implement com-

munity participation programs near protected areas.

The project is developing and managing at least four new protected areas, and is involving local communities in the planning and management of the forest resources and buffer zone. It is providing technical assistance and conservation training, which includes training in protected area management for field staff, upgrading of existing training programs, and advanced level training for professional conservation staff at foreign universities. Finally, the project is developing a biodiversity monitoring system for protected areas.

Project benefits include 1) protection of important biological diversity and wildlife habitat, reduction of deforestation, and protection of watersheds; and 2) improved incomes for forest communities. (Implemented by the World Bank.)

## LAO PDR

# Off-grid Electrification Pilot Demonstration, A Component of the Laos Southern Provinces Rural Electrification

**Focal Area:** Climate Change  
**Co-Financing:** \$5.45 million

**Project Dates:** 1997–

**GEF Grant Financing:** \$3.19 million

The goal of this project is to demonstrate renewable energy technologies as off-grid electrification options. The project will increase access to electricity in remote rural areas and demonstrate viable off-grid renewable energy technologies as alternatives to diesel power generation. It will establish local institutional, financial, and technical capacity for sustainable implementation of off-grid renewable energy power generation; install renewable energy demonstration systems; demonstrate the potential to displace diesel generators with renewable energy systems; and develop the institutional arrangements and scope for a national off-grid rural electrification program incorporating renewable energy technologies.

One set of project activities is aimed at creating capacity in the public and private sectors to carry forward with a

national renewable energy electrification program. The project is conducting training that includes management of the off-grid pilot as well as training in technical, institutional, and financial aspects of off-grid systems. A second project component involves micro-hydro minigrids, and combines training, data collection, and site selection to install renewable energy demonstration systems at six sites. The project also covers solar battery-charging stations; it is looking to lease solar charging station kits to local entrepreneurs or village cooperatives under a lease-to-buy contract.

Project benefits include 1) reduced greenhouse gas emissions from rural diesel generation, and 2) extension of electrification to remote rural areas. (Implemented by the World Bank.)

## MALAYSIA

# Conservation and Sustainable Use of Tropical Peat Swamp Forests and Associated Wetland Ecosystems

**Focal Area:** Biodiversity  
**Co-Financing:** \$6.67 million

**Project Dates:** 1999–2004

**GEF Grant Financing:** \$6.30 million

The goal of this project is to ensure the conservation and sustainable use of globally significant biodiversity within Malaysia's peat swamp forest areas through the pursuit of three objectives: demonstration of intersectoral planning, application of these plans, and institutional strengthening.

At each of three project sites, a strategy will be adopted to sustainably remove threats on the basis of a two-tiered approach involving activities in the core focal areas, supplemented by activities in the surrounding buffer areas. The project will ensure conservation and sustainable use at the sites, as well as demonstrate what is required for the adoption of a multisectoral approach to peat swamp forest management throughout Malaysia.

Project benefits include 1) installation of a data collection, information management, and monitoring program to facilitate decisionmaking; 2) development of well-formulated site management plans, addressing issues such as biodiversity, physical functions, and sustainable use; 3) establishment of interagency networks at the state level to integrate biodiversity overlays into development planning on peatlands; 4) improved awareness of peat forests and associated wetland ecosystems by decisionmakers, communities, and key stakeholders; and 5) strengthened institutional and human capacities to conserve and sustainably manage biodiversity in peat forests. (Implemented by the United Nations Development Programme.)

## MALAYSIA

### Industrial Energy Efficiency Improvement Project

**Focal Area:** Climate Change  
**Co-Financing:** \$12.63 million

**Project Dates:** 1998–2003

**GEF Grant Financing:** \$7.30 million

This project aims to reduce barriers that hinder implementation of energy efficiency and conservation. It focuses on energy use in Malaysian industries by establishing demonstration incentive schemes that build capacity and address perceived risk and lack of information among industrial producers. The project's ultimate goal is to ensure sustainable levels of industrial energy demand and use, resulting in reduction of greenhouse gas emissions.

The project is establishing benchmarks on energy performance in various industrial processes. It is setting up energy audit teams in preselected industry subsectors based on comparative sectoral energy performance. It is also establishing an industrial equipment testing facility; establishing comparative ratings; and assembling, organizing, and disseminating this information. It is conducting coordination, monitoring, and review of Malaysia's energy research insti-

tutions. It is stimulating establishment of credible and proactive energy service companies through a range of activities, and is undertaking various demonstration efforts to increase knowledge of energy-efficiency and conservation techniques and technologies. The project is offering incentives to selected manufacturers to produce generic energy-efficient equipment for most industrial sectors, and is making financial arrangements to provide loans to eligible companies and manufacturers that can host energy-efficient technology demonstration projects and design applications and produce energy-efficient equipment for demonstration of technologies.

Project benefits include 1) reduced greenhouse gas emissions from Malaysian industry, 2) reduced energy costs for Malaysian industry, and 3) improved competitiveness of locally manufactured products. (Implemented by the United Nations Development Programme.)

## MALAYSIA

### Biomass-based Power Generation and Co-generation in the Malaysian Palm Oil Industry, Phase I

**Focal Area:** Climate Change  
**Co-Financing:** \$10.82 million

**Project Dates:**

**GEF Grant Financing:** \$4.03 million

The goal of this project is the reduction of the growth rate of greenhouse gas emissions from fossil fuel-fired combustion processes and unused biomass waste through the acceleration of the growth of biomass-based power generation and combined heat and power (CHP). The main idea is to supplant part of the current fossil fuel consumption for power generation in Malaysia using biomass resources from the country's palm oil industry. The project purpose is to develop and exploit the energy potential of biomass waste resources in the country through biomass-based power generation and CHP.

The project's objective will be realized through the successful implementation of programs dealing with 1) information services and awareness enhancement on biomass energy technology, 2) policy studies and institutional capacity

building in the area of biomass energy technology, 3) financial assistance for biomass energy projects, 4) demonstration schemes for biomass-based power generation and CHP, and 5) biomass energy technology development. The project also provides contingent co-financing for five biomass power demonstration schemes (both greenfield and retrofits) involving a total of 24 megawatts of electric-generating capacity.

Project benefits include 1) development of an energy technology information exchange service, 2) studies of renewable electricity pricing and market promotion strategies, 3) a renewable energy business fund for small power producers, 4) training and technical assistance for local equipment manufacturers and power plant operators, 5) resource assessments, and 6) technology performance evaluations. (Implemented by the United Nations Development Programme.)

## MICRONESIA

### Community Conservation and Compatible Enterprise Development on Pohnpei

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 1999–2003

**GEF Grant Financing:** \$750,000

Pohnpei Island is a globally important site for biodiversity with some of the highest levels of species diversity and endemism in the entire Pacific island realm. This project aims to protect Pohnpei's biodiversity and develop model community-based conservation strategies and methods that can be transferred to other Micronesian states and Pacific island countries.

The project is working to control destructive *kava* cultivation in upland forests with the highest biodiversity value by developing a "green" lowland *kava* industry and other environmentally compatible enterprises designed to reduce pressures on upland forests. It is building the capacity of community-based organizations, community conservation officers, and the Conservation Society of Pohnpei to help protect targeted upland forests and marine areas of high biodiversity value. It is also building a community-based conservation monitoring and enforcement program to improve

community resource management and related decisionmaking. Additional project activities support the development of state and local conservation laws, policies, and financing mechanisms that promote effective, long-term, community-based conservation of the island's globally significant biodiversity.

Project benefits include 1) developing compatible enterprises designed to reduce pressures in areas of high biodiversity value, 2) enforcing regulations in areas of high biodiversity value, 3) monitoring biodiversity status and trends in select biodiversity plots, 4) adopting and implementing policy and legal reforms that remove barriers and provide a stronger supporting framework for community-based conservation, and 5) assessing a wide range of long-term resource management financing options and promoting the most promising mechanisms for supporting biodiversity conservation. (Implemented by the United Nations Development Programme.)

## MONGOLIA

### Biodiversity Conservation and Sustainable Livelihood Options in the Grasslands of Eastern Mongolia

**Focal Area:** Biodiversity  
**Co-Financing:** \$340 million

**Project Dates:** 1998–2005

**GEF Grant Financing:** \$10.10 million

The goal of this project is to create a model for biodiversity conservation and sustainable development. The project builds on the efforts of a previous GEF pilot phase project, which, among other things, helped strengthen the Ministry of Nature and Environment's ability to draft environmental legislation and protected area management plans and prepare a national biodiversity conservation action plan. The current project focuses on Mongolia's Eastern Steppe and is working to provide a model for biodiversity conservation and sustainable development to be applied to a well-defined and targeted area of the Eastern Steppe and later replicated throughout the region and elsewhere.

Project activities include ensuring effective management of seven protected areas in the Eastern Steppe, supporting

biodiversity conservation and alternative livelihoods in buffer zones of the protected areas, and incorporating and internalizing components of biodiversity conservation into provincial and local development plans to ensure the sustainability of activities and provide institutional frameworks to replicate these initiatives. The project is also supporting general measures for the long-term sustainability of these efforts.

Project benefits include 1) the protection of unique biodiversity in protected areas and buffer zones of steppe grasslands, 2) sustainable livelihoods for livestock herders and other settlers in the steppe region, and 3) strengthened capabilities of local and provincial government staff. (Implemented by the United Nations Development Programme.)

## MONGOLIA

# Strengthening Conservation Capacity and Development and Institution of a National Biodiversity Conservation Plan (Implementation Phase I)

**Focal Area:** Biodiversity  
**Co-Financing:** \$6.86 million

**Project Dates:** 1993–1998

**GEF Grant Financing:** \$5.16 million

The goals of this project were to build the capacity of the environmental ministry, national park service, and others for biodiversity conservation; and to prepare a biodiversity strategic framework and national biodiversity action plan. Specifically, the project worked to protect and promote conservation of Mongolia's largely unspoiled landscape and wildlife, chiefly by increasing the capacity of Mongolia's Ministry of Nature and the Environment.

The project established a staff training program for the ministry, and strengthened the abilities of parliamentarians and others responsible for drafting and implementing laws. It trained Mongolian professionals and students, among others, in conservation biology and the drafting of competitive research and grant proposals. It drafted new and revised policies to preserve biodiversity and worked to ensure their ratification. It facilitated the design and inauguration of na-

tional tourism laws, policies, and institutions to ensure that tourism benefited biodiversity conservation objectives. Under project auspices, a biodiversity information management system was designed and a biodiversity strategic framework prepared which in turn became the basis for a national biodiversity plan, accompanying legislation, and activities to implement the plan. It also conducted a national public awareness contest and national media campaign.

Project benefits include 1) maintaining the integrity of Mongolia's unique environment and preserving cross-border wildlife migration, 2) contributing to water and air quality, 3) increasing cooperation in the region on biodiversity conservation issues, and 4) enabling Mongolia to meet its obligations under the Convention on Biological Diversity. (Implemented by the United Nations Development Programme.)

## MONGOLIA

# Commercialization of Super-Insulated Building Technology

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:**

**GEF Grant Financing:** \$760,000

Mongolia has a severe continental climate where winter temperatures can fall as low as  $-40^{\circ}\text{C}$ . Heating buildings is an expensive necessity in such a climate, but doing so can have a direct effect on the government's ability to deliver social services, especially as budgets continue to be cut. This project addresses this problem by promoting greater energy efficiency in the public sector. Several approaches are being used, but a cornerstone of the effort is "super-insulated" straw-bale buildings. Early efforts in Mongolia have shown that fuel costs can be cut considerably by insulating floors, walls, and ceilings with straw.

The project is a follow-on to a UNDP-Mongolia effort, Provision of Energy Efficient Social Services; in addition to demonstrating straw-bale building technologies, that initiative also retrofitted existing buildings with improved insula-

tion materials, introduced solar energy technologies, and promoted low-cost straw-bale greenhouses for vegetable production.

This phase of the project focuses on energy efficiency in the housing sector. With GEF funding, the project will co-finance construction of up to 84 straw-bale houses in its five focal *aimags* (rural areas) as well as in the main cities of Ulaanbaatar, Darkhan, and Erdenet.

Project benefits include reduced carbon dioxide emissions from burning coal for heating, due to large-scale implementation of super-insulating, straw-bale building technology. In addition, less wood will be burned for heating, further reducing carbon dioxide emissions and protecting shrubs and forests. (Implemented by the United Nations Development Programme.)

## MONGOLIA

# Improved Household Stoves in Mongolian Urban Centers

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 2000–

**GEF Grant Financing:** \$780,000

Ulaanbaatar is the coldest capital in the world. Its inhabitants rely predominantly on the coal stove as a heat and cooking source: there are 70,000 coal-fired urban stoves concentrated in the poor *ger* (traditional tents) districts in Ulaanbaatar. The stoves are estimated as contributing 30 to 65 percent of Ulaanbaatar's air pollution.

This project aims to reduce Mongolia's emission of greenhouse gases. Its specific objectives are to 1) reduce coal fuel consumption, and corresponding carbon dioxide emissions and levels of air pollution in the *ger* area in a sustained way; 2) facilitate the creation of a market-based institutional delivery system that will allow sustainable reduction of coal consumption and corresponding carbon dioxide emissions into the future through the establishment of reliable manufacturers of efficiency indoor coal stoves and development of small energy service provider companies and other

means as required; and 3) replicate project benefits to other areas in Mongolia, particularly in the rural (*aimag*) centers.

These objectives will be achieved through the execution of five project components: social marketing activities, quality assurance activities, capacity building for energy service providers, new product facility activities, and monitoring and evaluation activities. These five sets of activities—selected from stakeholder feedback—will help create the right environment to provide consumers with cost-effective choices and financing options, and to provide suppliers with a reliable market.

Project benefits include 1) availability of cost-effective options to reduce coal consumption and improve heating, 2) a credible quality control system and standards for improved stoves, and 3) a market-driven institutional and financial delivery system for improved stoves. (Implemented by the World Bank.)

## MONGOLIA

# Dynamics of Biodiversity Loss and Permafrost in Lake Hovsgol National Park

**Focal Area:** Multiple Focal Areas  
**Co-Financing:** \$640,000

**Project Dates:**

**GEF Grant Financing:** \$830,000

Grazing impacts on the forest margins in permafrost areas are a widespread problem across Eurasia, with the consequent loss of biodiversity and the melting of permafrost, consequent decay of organic matter, and release of carbon dioxide. The goal of this project is to provide for the long-term protection of such forest/steppe areas by better understanding the scale and dynamics of natural and anthropogenic changes. Project objectives are to 1) identify the impacts of pasture use and forest cutting on the dynamics of forest, steppe, riparian zones, and streams in tributary valleys of Lake Hovsgol; 2) define how those impacts interact and are affecting the melting of permafrost (and thus the release of carbon dioxide), soil characteristics, and plant and animal biodiversity; 3) inventory climate change effects in the Hovsgol National Park; 4) determine sustainable resource use patterns that will also protect biodiversity, permafrost, and soil sequestration of carbon; and 5) calculate costs

and benefits of alternative land use practices, especially as related to pastoral nomads.

The project is documenting baseline environmental conditions in eight watersheds. It is determining whether land use practices and climate change have linear or synergistic interaction effects on permafrost and biodiversity. It is conducting an impact mitigation assessment, and disseminating information through workshops and reports.

Project benefits include 1) conserving significant biodiversity and slowing release of carbon dioxide; 2) developing databases and models to predict impacts of various livestock numbers and combinations, and of different timber-cutting regimes; and 3) developing menus of viable alternative patterns of resource use to protect biodiversity and sustain ecosystem function in soils, riparian zones, and streams. (Implemented by the World Bank.)

## NEPAL

# Arun Valley Sustainable Resource Use and Management Pilot Demonstration Project

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 2000–

**GEF Grant Financing:** \$630,000

The natural resources in the eastern part of the Arun River Watershed are fast depleting without any provision for future conservation. This project aims to mitigate the major threats to natural resources, especially to the forest and water, from anthropogenic activities, and design and evolve a pilot management project with locally tested and proven solutions for integrating local community participation in the management of natural resources, which will integrate traditional knowledge, skills, and ecological principles.

The project's objectives are to evolve community-based sustainable forest management practices, use traditional knowledge for the benefit of biodiversity conservation, create enabling conditions for conserving biodiversity, find economic and policy incentives to promote traditional knowledge for biodiversity conservation, analyze possible options for equitable sharing of benefits, promote the use and develop-

ment of alternative renewable energy resources, explore and implement livelihood/income-generation activities to help alleviate poverty and empower local communities, and recommend suitable policy and economic incentives to integrate into government strategic planning models. The project will inventory biodiversity and livelihood resources, conduct social assessments, establish micro-hydro systems, and disseminate lessons learned.

Project benefits include 1) tested and practicable methodology for using policy and economic incentives to promote local community involvement in forest management, 2) tested and practicable option for methodologies on equitable sharing of benefits, and 3) tested and practicable solutions for building stakeholder capacity in using traditional knowledge for the benefit of biodiversity conservation and sustainable use. (Implemented by the United Nations Environment Programme.)

## NEPAL

# Biodiversity Conservation in Nepal

**Focal Area:** Biodiversity  
**Co-Financing:** \$4.60 million

**Project Dates:** 1991–1999

**GEF Grant Financing:** \$3.80 million

This project supported formulation and implementation of a National Biodiversity Action Plan to provide a systematic and strategic approach to biodiversity conservation in Nepal. It also promoted local participation in planning and implementation at the Makalu-Barun National Park and Conservation Area (MBNPCA), the first protected area in the country to include an adjacent inhabited conservation area as a buffer zone. The project also aimed to enhance capacity to protect and manage biodiversity by providing training for personnel of the Department of National Parks and Wildlife Conservation.

Project activities included developing the action plan; undertaking a multidisciplinary research program in the MBNPCA to provide a better understanding of ecosystem dynamics, biodiversity populations, farming systems, natural resource use, and indigenous ethnic groups; and developing appropriate facilities, institutional arrangements, and

park management systems for the MBNPCA. The project encouraged traditional forms of natural resource management compatible with biodiversity preservation through a grassroots approach that established legally registered user groups in the conservation area. Through this project, more than 10,000 people in the area have learned about the environment through workshops, street theater, and brochures. Also, 10 environmental action groups have formed to promote fuelwood plantations, sanitation, and environmental education.

Project benefits include 1) better protection of a variety of plant and animal species, 2) improved social and economic conditions for communities neighboring the MBNPCA, 3) enhanced national capacity to protect and manage biodiversity, and 4) establishment of an internationally useful model for balancing conservation and development. (Implemented by the United Nations Development Programme.)

## NEPAL

# Landscape-scale Conservation of Endangered Tiger and Rhinoceros Populations in and around Chitwan National Park

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 2000–

**GEF Grant Financing:** \$750,000

Ineffective management, limitation of trained manpower for protection, high demand for forest products and land for agriculture, and lack of local participation have led to encroachment and degradation of corridor forest linking the Royal Chitwan National Park with additional upland habitats, and depletion of grasslands. The goal of this project is to enhance and secure protection and conservation of viable populations of flagship species and their habitat through corridor management and the introduction of effective management practices.

The project will protect and manage the Barandabhar corridor forest that links the lowland and mid-hill ecosystems of Nepal, and strengthen the antipoaching unit. It will address ecological restoration and effective management of key grassland ecosystems. The project will also improve knowledge of biodiversity through the development and application of a scientifically based biological assessment pro-

gram. The project will establish a community-based conservation model. It will increase environmental awareness and the health of local institutions and communities, and reduce local pressure on natural resources by providing alternative livelihood options such as agroforestry, livestock development, and ecotourism. It will enhance biodiversity conservation practices through application of local indigenous knowledge.

Project benefits include 1) effective protection of an important wildlife corridor forest linking two critical ecosystems, 2) restoration of the *kans* grassland ecosystem, 3) establishment of a community-based conservation model with capable governance structures, 4) in-place grassroots-level integrated programs to reduce local pressures on resources, and 5) management decisions supported by scientific assessments of biodiversity support. (Implemented by the United Nations Development Programme.)

## NEPAL

# Upper Mustang Biodiversity Project

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 1999–2005

**GEF Grant Financing:** \$750,000

The high-altitude rangelands of Upper Mustang in northwestern Nepal are home to the endangered snow leopard and other species, including the Tibetan wolf, Tibetan argali (a mountain sheep), lynx, and brown bear, as well as endangered plant species. The objective of this project is to conserve the globally significant natural and cultural environment in this Paleoarctic biogeographical region by blending biodiversity conservation with the preservation of indigenous culture and the provision of basic human needs. Specifically, project activities involve building institutional capacity of the people to protect their environment, develop data collection of essential information, and undertake demonstration activities in rangeland management and tourism activities. GEF funding will be used to support and strengthen local governance and decentralized planning, coordination, and implementation of development activities through social mobilization.

Communities, Buddhist monasteries, and government bodies in the area will help carry out the project, which will assess a vast body of local knowledge of pastoralism and integrate it into Nepal's national natural resources management plan. Local NGOs will undertake activities to preserve the area's unique Buddhist cultural heritage. The project seeks to improve local livelihoods, encourage environmentally friendly tourism, and become self-sustaining—in part through resources generated by increased tourism.

Project benefits include bringing the rural people of Upper Mustang together in self-governing community institutions to 1) enhance participation, 2) increase accountability, and 3) mobilize additional local resources for creating better investment opportunities for local development. (Implemented by the United Nations Development Programme.)

## PAKISTAN

# Maintaining Biological Diversity with Rural Community Development

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1992–	<b>GEF Grant Financing:</b> \$2.50 million
<b>Co-Financing:</b> None		

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This project operates in the Northern Areas and North-West Frontier Province of Pakistan. Its main objectives are to assess the effectiveness of rural village management of wild species and/or habitats to conserve biodiversity in Pakistan, and to determine how government agencies and NGOs can assist rural villages to develop biodiversity management plans with adequate controls to prevent overexploitation. The project seeks to achieve these objectives by providing communities with technical skills and know-how, support for legislative and policy reform, environmental education and awareness, and assistance in developing and implementing conservation plans and funds. The project is based on the concept that conservation initiatives can only succeed if they provide both economic and capacity development incentives for communities.

Under project auspices, rural communities are receiving

technical assistance to develop and implement natural resource management plans compatible with their own development priorities. These plans are developed in participation with local and provincial governments. The project has demonstrated considerable commitment and ownership by the communities, and innovative approaches have been developed to ensure their continued involvement. The project has prepared a wildlife policy for Pakistan, and project staff have assisted the government of Pakistan in drawing up a CITES resolution, allowing for limited export of the endangered markhor from Pakistan. Other sustainable income-generating strategies, such as ecotourism and the use of medicinal plants, are being researched.

Project benefits include 1) sustainable use of natural resources, and 2) economic well-being of the involved communities. (Implemented by the United Nations Development Programme.)

## PAKISTAN

# Mountain Areas Conservancy Project

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1998–2005	<b>GEF Grant Financing:</b> \$10.60 million
<b>Co-Financing:</b> \$6.20 million		

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This project aims to protect the rich ecological landscapes and biodiversity of the Karakoram, Hindu Kush, and Western Himalayan mountain ranges of northern Pakistan. The principle focus is on empowering local communities to manage biodiversity, making them accountable for the quality of their resource stewardship. Four wildlife conservancies will be established representing the biogeographic zones of the high mountains. Within the conservancies, activities will facilitate the in-situ conservation of habitats and species and promote sustainable uses of components of biodiversity.

The project is strengthening the institutional and human capacity of community-level organizations to conserve biological diversity and put in place planning and management structures. Conservation values are being imparted through a well-targeted conservation education and awareness drive, developing avenues for sharing information and experiences

regarding natural resource management among villagers. Capacity is being built at the village level to enable stakeholders to monitor impacts and assess the sustainability of wild resource uses. Development agencies and communities will be targeting financial and human resources toward long-term village ecodevelopment in the conservancies.

Project benefits include 1) protecting unique ecosystems, species, and races that otherwise would face local and global extirpation; 2) maintaining use, option, amenity, and other values for the benefit of future generations; 3) strengthening local and provincial government staff through training programs, additional field experience, and sensitization to participatory conservation methods; and 4) training field staff of partner NGOs and development agencies in participatory conservation methods. (Implemented by the United Nations Development Programme.)

## PAKISTAN Protected Areas Management Project

**Focal Area:** Biodiversity  
**Co-Financing:** \$15.70 million

**Project Dates:** 1997–

**GEF Grant Financing:** \$11.14 million

The goal of this project is to conserve globally important habitats, genomes, and species in three protected areas in Pakistan: one consisting of arid lowland, montane, and coastal habitats; another of Himalayan forests; and the third of alpine forests.

The project will improve roads, visitor centers, bridges, etc., and implement a management program to encourage biodiversity and reduce the impact of human activities. It will generate alternative sources of income for local communities and resource conservation. Short-term in-service training will be provided, as will improved training facilities and programs at provincial and national forest institutions. The project will increase public awareness on and encourage tourism to protected areas. It will identify and implement measures for financial sustainability to enable protected ar-

reas to meet recurring costs, as well as identify sources of revenue from public and private sources and institute measures for cost recovery. Additional project activities address clarifying land issues regarding protected areas, their legal status, and community rights; and formulating site-specific policy decisions for protected area management that can be applied elsewhere.

Project benefits include 1) protecting biodiversity and ecosystems by reducing human pressures on protected areas; 2) becoming financially sustainable through entrance fees, user charges, and other sources; 3) strengthening long-term institutional support for protected areas; 4) providing employment to local people in construction and tourism; and 5) increasing the local skill base for application in other conservation programs. (Implemented by the World Bank.)

## PAKISTAN Fuel Efficiency in the Road Transport Sector

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 1992–2001

**GEF Grant Financing:** \$7.00 million

The goal of this project is to improve the fuel efficiency of vehicles through better maintenance and fuel-efficient technologies. Its objectives are to reduce carbon emissions by introducing and promoting state-of-the-art vehicle engine tune-up technologies and by helping the government of Pakistan identify long-term options and prepare policy recommendations for sustaining fuel efficiency in the road transport sector.

The project relies primarily on market mechanisms; the private sector is playing a pivotal role in achieving its short- and long-term objectives. The project is establishing 10 gasoline and five diesel tune-up demonstration centers, and is conducting a series of two-day workshops for garage owners to explain the benefits of using instruments and diagnostic equipment and instrumented tune-ups. It is promoting awareness of instrumented tune-ups by developing a com-

munications strategy, preparing publicity materials, and launching a public awareness campaign through newspapers and television. To support project activities and plan and implement energy conservation projects in the private sector, the project is building ENERCON's capabilities; this organization is the government counterpart agency for the project. Additionally, a revolving fund is being established to finance the purchase of tune-up equipment, and special studies on fuel-efficient engines and alternative fuel technologies are being undertaken.

Project benefits include 1) restricting growth in vehicle exhaust emissions of greenhouse gases and other pollutants; and 2) improving air quality and, therefore, the health of the general population. (Implemented by the United Nations Development Programme.)

## PAPUA NEW GUINEA

# Biodiversity Conservation and Resource Management

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 1991–1998

**GEF Grant Financing:** \$5.00 million

This project sought to expand the nation's conservation system to conserve biodiversity. Its goals were to establish pilot projects to demonstrate integrated approaches to conservation and development, and to strengthen the country's environmental department and expand its conservation system.

The project's first pilot, at Lak, yielded important lessons about the need to enter a community carefully, being sure to address social criteria, conduct education, and downplay expectations. These lessons were applied at the project's second site, Bismarck-Ramu, where a social feasibility study was conducted to monitor the impact of project activities, education was conducted to build support for conservation and challenge communities to rethink development strategies, and a participatory approach was applied with regard to the education component and planning and execution of community development and conservation man-

agement activities.

The project played an essential role in assisting the country's Department of Environment and Conservation with technical projects, including completion of a country study on biodiversity and a biodiversity data management project. The project also completed a feasibility study for a conservation trust fund to contribute to the long-term sustainability of conservation efforts in the nation.

Project benefits include 1) increased conservation of natural areas with diverse species, habitats, and ecosystems; 2) sustainable development opportunities provided for landowners; 3) strengthened capability of national institutions to develop and plan conservation policy; and 4) partnerships established among government, NGOs, and others. (Implemented by the United Nations Development Programme.)

## PAPUA NEW GUINEA

# Forestry and Conservation Project

**Focal Area:** Biodiversity  
**Co-Financing:** \$38.20 million

**Project Dates:** 1998–2005

**GEF Grant Financing:** \$17.30 million

This project promotes conservation and sustainable use of biodiversity and more equitable sharing of benefits accruing from forest resources. Its goals are to empower landowners to manage forests sustainably and make commercial logging less damaging, and to encourage landowners to set aside biologically rich forest areas for conservation purposes.

The first of the project's several components supports the development of more participatory and effective landowner forest decisionmaking processes and consultative bodies by establishing legal mechanisms to recognize and protect local clan land and forest use decisions. A second component will establish a conservation trust fund to provide an ongoing and reliable source of in-country funding for biodiversity conservation and ecologically sustainable development. Activities in a third project component augment

efforts by the Forest Authority and others to achieve sustainable forest management by supporting institutional reform and technical assistance to improve capacity and incentives for implementing sustained-yield forest management in areas that are being commercially managed for timber production. A final component will provide technical assistance to develop and test rigorous assessment and monitoring methodologies and operational systems under a new environmental regulatory framework.

Project benefits include 1) improved protection of globally significant tropical forest biodiversity; 2) more sustainable and participatory forest utilization, with more effective government oversight; 3) watershed protection, enhancing soil and water quality; and 4) enhanced carbon sequestration by forests. (Implemented by the World Bank.)

## PHILIPPINES

# Biodiversity Conservation and Management of the Bohol Islands Marine Triangle

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 2000–

**GEF Grant Financing:** \$740,000

The growing concern for protection of coral reefs and other coastal resources is making conservation a much higher priority in the Philippines than in the past. These rich ecosystems and their natural productivity are under threat from a variety of problems affecting the coastal and marine environment and its human communities. The Bohol Marine Triangle (BMT) area has been selected as a high priority area to address marine conservation issues. The overall goal of this project is to ensure that options and existence values of the globally significant BMT are conserved. The project's primary objective is to enable the conservation of the biodiversity resources in the BMT through more effective, equitable, and sustainable planning; implementation; and monitoring; and law enforcement of biodiversity conservation efforts.

The project will be accomplished through a community-based conservation management and multisectoral partner-

ship between government, local industries, non-government, and civic organizations. A key focus of interventions are the formulation, implementation and institutionalization of a 10-year integrated master plan; marine reserve zoning; coastal resource management plan formulation and implementation by local stakeholders; improved biodiversity research, and monitoring and law enforcement.

Project benefits include 1) strengthened government and community institutions to facilitate the application of a coastal management framework, with the establishment and maintenance of marine reserves as a major component; 2) development and application of policies and guidelines to facilitate elimination of destructive activities; and 3) relevant and reliable information used for monitoring and inventory and as a basis to establish sustainable harvesting. (Implemented by the United Nations Development Programme.)

## PHILIPPINES

# Coastal and Marine Biodiversity Conservation in Mindanao

**Focal Area:** Biodiversity  
**Co-Financing:** \$4.80 million

**Project Dates:** 1999–2011

**GEF Grant Financing:** \$1.25 million

The Mindanao Rural Development Project is expected to improve rural infrastructure, support demand-driven sub-projects identified by rural communities, empower local government units through capacity building, and support coastal and marine biodiversity conservation; these activities will benefit more than 600,000 people in rural areas in Mindanao. The GEF-assisted coastal and marine biodiversity conservation component of this project aims to remove barriers to mainstreaming marine and coastal biodiversity conservation in coastal zone development.

Specific project activities include establishing community-based management of marine sanctuaries; strengthening local capacity to address marine ecosystem management issues; enhancing the knowledge base for sound ecosystem management and decisionmaking, including

monitoring and evaluation for sustainable long-term marine ecosystem management; and developing policy and action plans for marine biodiversity conservation. These activities will have considerable replication potential in Mindanao as part, and the lessons learned will have applicability in other regions of the Philippines and in other tropical countries.

Project benefits include 1) resource assessment survey of selected conservation sites; 2) strengthened local marine resources surveillance; 3) resource monitoring and evaluation program; 4) alternative income-generation activities developed and executed; and 5) personnel from government agencies, NGOs, schools, etc., trained in sustainable marine and fisheries management issues. (Implemented by the World Bank.)

## PHILIPPINES

### Conservation of Priority Protected Areas

**Focal Area:** Biodiversity  
**Co-Financing:** \$2.86 million

**Project Dates:** 1991–2002

**GEF Grant Financing:** \$20.00 million

This project aims to conserve the Philippine nation's biological wealth by developing a system of protected areas that also improves the way of life of nearby communities. In 10 priority areas representing the six most important biogeographic zones, the project is improving protected area management, incorporating local NGOs and communities into protected area management, and supporting alternative economic activities compatible with biodiversity protection. The sites cover a total of 1.25 million hectares and include forests, wetlands, and marine areas. The project is working to provide resource and socioeconomic management and institution strengthening. It is also demonstrating, among others, the use of zoning in protected areas and buffer zones to permit legal income opportunities for tenured residents.

Project activities address site development, in terms of appropriate levels and quality of staffing and construction of

access roads and trails, housing, offices, and visitor facilities. The project is also involved in resource management, including community-based and NGO-supported management structure, management plans, mapping and boundary marking, and habitat restoration. Socioeconomic management activities include community consultation and training, population registration and tenure delineation, and development of nondestructive livelihood opportunities compatible with biodiversity conservation. Finally, the project is engaged in national coordination, monitoring, and technical assistance.

Project benefits include 1) the protection of 10 globally significant sites and the promotion of biodiversity-friendly economic alternatives, 2) improvement of the national government's protected areas management capacity, and 3) bolstered capabilities of non-governmental environmental organizations and local communities. (Implemented by the World Bank.)

## PHILIPPINES

### Conservation of the Tubbataha Reefs National Marine Park and World Heritage Site

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 2000–

**GEF Grant Financing:** \$750,000

The overall objective of this project is to conserve the unique and relatively pristine condition of the globally significant biological diversity and ecological processes of the Tubbataha Reefs National Marine Park (TRNMP) and to manage TRNMP and the surrounding area on a sustainable and ecologically sound basis. TRNMP conservation depends in part on actions in the surrounding areas including the islands of Cagayancillo and Cavili. Human inhabitants of these islands threaten TRNMP as they are using and permitting the extraction of resources from the park.

Project activities are aimed at 1) conservation management—bringing about the effective long-term conservation management of TRNMP; 2) conservation awareness—raising awareness regarding the importance of conserving TRNMP such that stakeholders (local communities, government, dive operators, tourists, and others) are aware of and

actively participating in conservation; 3) regulations, policy, and Advocacy—ensuring that relevant policies, regulations, and government appropriations support conservation and resource management in TRNMP; 4) ecosystem research and monitoring—enhancing ecological understanding and adaptive management of TRNMP and nearby reefs through an ecosystem research and monitoring program; and 5) sustainable resource management and livelihood—enhancing conservation by developing and implementing effective community-based resource management and livelihood projects.

Project benefits include 1) conservation of biodiversity through improved knowledge and management systems, 2) research and development, 3) better information availability and institutional support mechanisms, 4) the sustainable use of biodiversity, and 5) equitable sharing of the benefits of biodiversity. (Implemented by the United Nations Development Programme.)

## PHILIPPINES

# Samar Island Biodiversity Project: Conservation and Sustainable Use of the Biodiversity of a Forested Protected Area

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<b>Focal Area:</b>	Biodiversity	<b>Project Dates:</b>	1999–	<b>GEF Grant Financing:</b>	\$760,000
<b>Co-Financing:</b>	\$4.63 million				

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This project aims to expand conservation coverage in the Eastern Visayas biogeographic zone through the establishment of a new protected area zoned for multiple uses, the Samar Island Natural Park. The park will cover an area of 347,000 hectares, with a surrounding buffer of 123,000 hectares. The project will pilot a participatory community-based conservation regime.

The project is establishing a conservation framework for surveillance and enforcement of protected area management operations, and creating a social organization to facilitate community-based conservation. Activities address environmental awareness and education to impart broad-based conservation awareness values to forest communities. Through integrated management of conservation and development, the project will promote the internalization of conservation objectives in sectoral development activities.

The project is working to develop sustainable livelihoods to ensure that conservation-compatible development activities are pursued. It is also putting into place mechanisms to finance conservation activities.

Project benefits include 1) legal protection for biodiversity, 2) improved participatory planning and monitoring capabilities, 3) better integration of conservation and community development objectives, 4) enhanced awareness among decisionmakers and civil society to build a local/regional constituency for conservation, 5) improved understanding of the linkages between conservation and development, and 6) strengthening of financial management capacities and widening of funding base to cover recurrent conservation management costs. (Implemented by the United Nations Development Programme.)

## PHILIPPINES

# Sustainable Management of Mount Isarog

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<b>Focal Area:</b>	Biodiversity	<b>Project Dates:</b>	2000–2004	<b>GEF Grant Financing:</b>	\$6.11 million
<b>Co-Financing:</b>	None				

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As one of the oldest national parks in the country, Mount Isarog is one of the few remaining bastions of Philippine "megadiversity." However, it faces intense anthropogenic pressure from communities living along its boundaries and within the park, and from external interest groups. These pressures are caused by a combination of human factors including poverty, a lack of awareness about biodiversity and conservation policy and law, insecure landholding and investment, poor law enforcement against illegal land clearance and logging, and weak community and institutional mechanisms to protect the forest.

This project aims to significantly enhance local institutional capacity and community involvement in managing the national park. By building managerial and financial capacity, the project will reduce the gap between the government of

the Philippines, the Protected Areas and Wildlife Bureau, and the communities they serve, creating a social "fence" around the park. Other project activities will be dedicated to information, education, and communication; promotion of ecologically sustainable livelihoods; and ecological and socio-economic surveying as a basis of community-based biodiversity monitoring.

Project benefits include 1) stronger conservation and management policy and practice; 2) increased public understanding of the park's value and the impact of human behavior on its habitat and biodiversity; 3) increased environmental literacy, ethics, and advocacy among stakeholders; and 4) enhanced land tenure security among primary stakeholders. (Implemented by the United Nations Development Programme.)

## PHILIPPINES

### CEPALCO Distributed Generation PV Power Plant

**Focal Area:** Climate Change  
**Co-Financing:** \$3.50 million

**Project Dates:** 1999–2001

**GEF Grant Financing:** \$4.03 million

Solar photovoltaic (PV) technology is a source of electricity that is cost effective in many off-grid markets around the world. However, on-grid applications have so far been limited to a few installations in developed countries, even though PV offers various advantages as a distributed generating source. The two reasons for this lag are the high costs of PV compared to thermal alternatives and the need for additional energy storage because of the interruptible and variable nature of solar energy. This project involves the construction of a 1-megawatt distributed generation power plant operated in conjunction with a hydro plant to provide higher value firm peak-load power. The plant is expected to operate without substantial problems for 20 years after installation. Over its lifetime, it is expected to produce 39 million kWh of electricity.

The project will reduce the need for CEPALCO, a pri-

vate utility operation on the island of Mindanao in the Philippines, to purchase additional quantities of thermal plant-based power, thereby reducing its emissions of greenhouse gases. More importantly, it is expected that this plant will provide the first full-scale demonstration of the environmental and economic benefits of the conjunctive use of hydro and PV-based power anywhere in the world, as well as the first significant use of grid-connected PV in a developing country.

Project benefits include 1) valuable operating experience for the installation and operation of large-scale PV plants in the developing world, and in the use of PV in conjunction with existing, water-constrained hydroelectric plants to provide firm generating capacity; 2) valuable lessons and insights in promoting larger scale use of grid-connected PV power plants in the developing world, and 3) a compelling model for replication. (Implemented by the World Bank.)

## PHILIPPINES

### Leyte-Luzon Geothermal

**Focal Area:** Climate Change  
**Co-Financing:** \$1,303.60 million

**Project Dates:** 1991–2000

**GEF Grant Financing:** \$30.00 million

In 1991–93, demand for electric power in the Philippines far outstripped supply. Prolonged outages hampered industry and commerce, costing the economy jobs and an estimated \$1 billion a year. Moreover, demand was expected to double by the year 2000. To answer to this situation, the goal of this project was to develop geothermal power and test the effectiveness of carbon dioxide capture and reinjection. Specifically, the project aimed to meet the rapidly rising demand for power in Luzon by promoting the use of indigenous, environmentally superior geothermal energy.

The project worked to improve the energy sector's institutions, planning, and finances per the government's Energy Sector Plan. It also extended the national grid to support private sector participation in power generation. In this regard, it built 430 kilometers of twin-circuit high-voltage direct

current overhead transmission line from two converter stations to cable terminal stations, electrode lines linking the two converter stations, and remote electrode stations. Another aspect of the project was providing technical assistance to strengthen the environmental and social engineering departments at the National Power Corporation to enhance that entity's ability to carry out environmental and social impact analyses, as well as to help improve its corporate efficiency, policy, and finances.

Project benefits include 1) reduction in emissions of carbon dioxide by 120 million tons over 25 years; 2) provision of a reliable, cost-effective, and environmentally friendly power supply to the Luzon region; and 3) reduced need for reserve capacity in individual islands' power systems. (Implemented by the World Bank.)

**PHILIPPINES**  
**Metro Manila Urban Transport Integration Project:  
Marikina Bikeways Project Component**

**Focal Area:** Climate Change  
**Co-Financing:** \$190,000

**Project Dates:** 2000–

**GEF Grant Financing:** \$1.88 million

The key objective of this project, which is a component of the broader Metro Manila Urban Transport Integration Project, is to slow the growth of transport-related greenhouse gas emissions by promoting the use of more nonmotorized transport. Emphasis is mainly on the use of bicycles, which the project seeks to transform into a very safe and convenient transport mode in the city of Marikina. Public transportation is the dominant mode of travel in Manila, but the existing urban transport strategy has proven inadequate, and the two existing systems have resulted in extensive environmental problems. This project attempts to answer the need for improved network hierarchy in traffic management so as to enhance access to outer areas and full-scale utilization of rail corridors, among other resources.

To achieve its goals, the project is constructing a 66-

kilometer-long network of trails and road lanes specifically designed for nonmotorized transit to be known as the Marikina Bikeway System. This system will improve street-level interchanges while connecting residential areas, schools, employment centers, and other public transport terminals.

Project benefits include 1) reduced motorized traffic congestion and decreased pollutant emissions; 2) improved road network, enhanced use of public transport, and increased access to outer areas; 3) demonstration of the benefits and viability of bicycles and other nonmotorized transport facilities and the efficacy of traffic management measures as a cost-effective means to manage congestion along major travel corridors; and 4) encouraging the development of similar facilities elsewhere in Metro Manila and the Philippines. (Implemented by the World Bank.)

**PHILIPPINES**  
**Palawan New and Renewable Energy and Livelihood Support Project**

**Focal Area:** Climate Change  
**Co-Financing:** \$1.80 million

**Project Dates:** 1999–2002

**GEF Grant Financing:** \$750,000

Most of the households in Palawan, particularly in Northern Palawan where a majority of people do not have access to electricity at present, are scattered on isolated islands. The transport costs of diesel fuel are high, and grid extension to remote communities is not economically viable. On the other hand, Palawan has abundant renewable energy resources, including solar, wind, hydro, and biomass resources. Due to a large number of policy, institutional, information, finance, marketing, and technical barriers, applications of renewable energy are insignificant in Palawan at present.

This project is aimed at reducing the long-term growth of greenhouse gas emissions by removing these barriers to commercial utilization of renewable energy systems to substitute for the use of diesel generators in Palawan. Project activities will build capacity for local government units and rural electric cooperatives. A public awareness campaign on

renewable energy will be conducted. The project will establish a renewable energy development center; it will also design a risk-sharing mechanism to support rural energy service companies.

Project benefits include 1) increased capacity for and recognition of renewable energy and renewable energy service companies at the local government level, 2) establishment of a range of financial incentives, 3) a revised provincial energy master plan, 4) increased public awareness of renewable energy systems and companies, 5) increased information and services provided to potential investors in renewable energy, and 6) a commercial and sustainable rural energy services company delivery mechanism set up to provide renewable energy services in Palawan. (Implemented by the United Nations Development Programme.)

# RUSSIAN FEDERATION Biodiversity Conservation

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1994–2002	<b>GEF Grant Financing:</b> \$20.10 million
<b>Co-Financing:</b> Government of Russia, \$5.80 million; Government of Switzerland, \$1.10 million		

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This project aims to mitigate environmental threats to the Lake Baikal of Russia stemming from underdeveloped management practices and a lack of federal and regional action plans for biodiversity conservation. Key project goals are to 1) protect areas under serious threat and 2) increase links between economic reforms and biodiversity conservation.

With one-eighth of the world's land mass, the Russian Federation contains an enormous range of ecosystems, representing some of the last remaining areas in which ecological processes and wildlife populations operate naturally. Difficult economic circumstances and scarce resources prompted the Russian Federation to seek World Bank assistance to systematically address biodiversity threats. This project is working to support development of federal and regional biodiversity strategies, improve conservation in seven

ecologically representative regions, support local communities and activities of non-governmental organizations in the Baikal region, integrate biodiversity conservation and environmental protection into policymaking, and demonstrate sustainable biodiversity conservation and natural resource management.

Among key project benefits are 1) ensuring the viability and safety of some of the world's most endangered species and rich biodiversity areas, 2) safeguarding vast expanses of vegetation and habitat that act as a carbon sink, 3) helping the government develop a viable and sustainable economy, 4) demonstrating synthesis of environmental protection and sustainable development for replication elsewhere, and 5) developing greater economic self-sufficiency in communities near protected areas. (Implemented by the World Bank.)

## RUSSIAN FEDERATION Demonstrating Sustainable Conservation of Biological Diversity, Phase I

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b>	<b>GEF Grant Financing:</b> \$2.36 million
<b>Co-Financing:</b> \$2.78 million		

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The 1,500-kilometer-long Kamchatka peninsula is one of the world's last remaining natural areas still offering opportunities to conserve outstanding globally significant biodiversity values. The historically remote area has today become open to visitation; thus, its biodiversity faces growing threats from organized poaching, uncontrolled access and unmanaged land use, and resource exploitation beyond sustainable levels.

This project will help secure the global benefits of conserving biological diversity in all protected areas in the Kamchatka Oblast by demonstrating replicable, sustainable approaches to biodiversity conservation in four existing representative protected areas. The project aims to 1) strengthen the protected areas' administrative and management capacity; 2) enable the development of a more rational and supportive protected area legal foundation; 3) increase stakeholder biodiversity conservation awareness, commitment,

and participation in protected area management; 4) enable biodiversity conservation promoting alternative livelihood pursuits for local communities; 5) increase efficiencies by improving collaboration between federally and regionally administered protected areas and among responsible authorities; and 6) leverage co-funding support to ensure the attainment and sustainability of project results.

The expected project outputs include strengthened protected area management; improved information on protected areas; establishment of a sustainable financing mechanism; a strengthened legal, regulatory, and policy base; heightened biodiversity awareness and advocacy; and enabling mechanisms to support alternative livelihoods and community-based conservation. (Implemented by the United Nations Development Programme.)

## RUSSIAN FEDERATION

# Capacity Building to Reduce Key Barriers to Energy Efficiency in Russian Residential Buildings and Heat Supply

**Focal Area:** Climate Change  
**Co-Financing:** \$2.61 million

**Project Dates:** 1996–2002

**GEF Grant Financing:** \$2.98 million

This project aims to reduce greenhouse gas emissions from wasteful energy use in Russian residential buildings and heat supply. Key project goals are to 1) create incentives for energy efficiency and conservation, 2) identify economically optimal district heating systems, and 3) increase capabilities to analyze capital investment projects for feasibility and energy efficiency.

While federal legislative actions and other developments have recently focused more attention on energy efficiency, real progress in this area is more likely to come from local initiatives and activities. Opportunities to reduce energy consumption by 25 to 50 percent through improving heating systems, distribution pipelines, and building insulation are technically feasible and cost-effective, and exist in all of Russia's

89 regions. This project is helping to create a prototype residential heat and hot water metering and billing system, examine the feasibility of autonomous heat production in residential and public buildings, build local capacity to conduct analyses and feasibility studies for financing purposes, and enhance management and staff abilities to implement and monitor project activities. Experience gained in Vladimir will be disseminated to other cities in the Russian Federation.

Among key project benefits are 1) reducing greenhouse gas emissions by reducing energy consumption in Vladimir and other regions; and 2) providing cost savings to residents of multifamily dwellings, local governments, and industry in Vladimir. (Implemented by the United Nations Development Programme.)

## RUSSIAN FEDERATION

# Greenhouse Gas Reduction

**Focal Area:** Climate Change  
**Co-Financing:** World Bank, \$70.00 million

**Project Dates:** 1992–1999

**GEF Grant Financing:** \$3.20 million

This project aimed to reduce the large amounts of methane gas emitted from Russian oil and gas production and to improve Russia's poor record on energy efficiency. With its large oil and gas production facilities and 5,000-kilometer pipelines from Western Siberia, Russia produces substantial emissions of methane gas. Key project goals were to 1) assess the release of methane into the atmosphere and propose measures to reduce emissions and 2) identify investment projects to reduce carbon dioxide emissions by increasing gas use efficiency.

This project, primarily the responsibility of Russia's Ministry of Fuel and Energy, is closely linked to the World Bank's Energy Efficiency project. Project activities included identifying and evaluating potential sources of greenhouse gas

emissions, assessing methane and carbon dioxide leaks and how to mitigate them, and quantifying sources of greenhouse gas emissions and assessing means to reduce them through energy efficiency measures. The above information was then used to identify investment projects and new construction and operation procedures to reduce greenhouse gas emissions.

Among key project benefits are 1) identifying investment opportunities to significantly reduce Russia's greenhouse gas emissions, 2) stimulating the interest of the Ministry of Fuel and Energy and the private sector in reducing greenhouse gases in energy-sector investment planning, and 3) supporting enforcement of environmental laws and regulations. (Implemented by the World Bank.)

## RUSSIAN FEDERATION

# Persistent Toxic Substances, Food Security, and Indigenous Peoples of the Russian North

**Focal Area:** International Waters  
**Co-Financing:** None

**Project Dates:** 2000–2002

**GEF Grant Financing:** \$750,000

The overall goal of this project is to reduce the contamination of the Arctic environment by persistent toxic substances (PTS). Recent studies have shown significantly elevated environmental levels of PTS in the Russian Arctic, where, due to the present economic problems, consumption of highly contaminated country food by indigenous peoples is increasing (walrus, bowhead whale, etc.). The project will 1) assist indigenous peoples in developing appropriate remedial actions to reduce health risks resulting from the contamination of their environment and traditional food sources; 2) enhance the position of the Russian Federation in international negotiations to reduce the use of PTS, and empower indigenous peoples to participate actively and fully in these negotiations; and 3) enable the Russian Federation and Russian Association of Indigenous Peoples of the North to increase their involvement in the work of the eight-nation

Arctic Council to reduce PTS emissions.

Project activities include assessment of the role of pollution on health and development of recommendations, study of biomagnification in Arctic food chains, monitoring of PTS levels in humans, dietary surveys of selected indigenous communities, assessment of local pollution sources in the vicinities of selected indigenous communities, assessment of distant sources and fluxes of PTS to Arctic Russia, capacity building, and dissemination.

The project's outcomes will include 1) recommendations on measures to reduce exposure of indigenous peoples to PTS, 2) assessment of the significance of aquatic food chains as a pathway of PTS exposure for these peoples, and 3) assessment of the relative significance of local and distant sources of PTS. (Implemented by the United Nations Environment Programme.)

## RUSSIAN FEDERATION

# Phase-out of Ozone Depleting Substances

**Focal Area:** Ozone Depletion  
**Co-Financing:** Participating enterprises, \$111.10 million

**Project Dates:** 1995–2004

**GEF Grant Financing:** \$65.90 million

This is a framework project, involving grant funding to be disbursed for eligible phase-out investments and supporting technical assistance in three tranches. It aims to reduce consumption of ozone depleting substances in Russia with a minimum of economic dislocation.

The first project tranche sought to eliminate annual consumption of approximately 2,573 MT of weighted ODS potential, or about 5 percent of Russia's 1992 weighted consumption; the second tranche aimed to eliminate 11,483 MT, or about 24 percent. The third tranche 1) expands the project's scope to cover all consumption sectors, 2) provides supplementary support for the Special Initiative for ODS Production Closure in the Russian Federation, 3) supports residual ODS phase-out beyond 2000 through a Small Grant program, and 4) provides technical assistance for full program implementation.

The project supports the closure of one of the world's largest ODS production capacities at a remarkably high cost effectiveness (\$0.20/kg ODP), while allowing the country to effectively and rapidly deal with its residual phase-out management requirements. The project provides for complete phase-out of ozone depleting substances in the country's commercial and industrial aerosol sectors and in major domestic refrigerator manufacturing.

Full compliance with Montreal Protocol control measures is expected.

Key project benefits include 1) contributing to human health and the global environment and 2) helping viable, market-oriented enterprises modernize their manufacturing and develop export-ready products using non-ozone depleting technology. (Implemented by the World Bank.)

## SAMOA

# Marine Biodiversity Protection and Management

**Focal Area:** Biodiversity  
**Co-Financing:** \$680,000

**Project Dates:**

**GEF Grant Financing:** \$900,000

This project seeks to protect critical sites for marine biological diversity within the core zones of large multiple-use marine protected areas (MPAs) in the Aleipata and Safata districts of Upolu Island. The ecosystems included in this project are among Samoa's best remaining examples of coral reef, mangrove, and lagoon environments. The project's objective is to empower local communities in these districts to protect and manage coastal marine biological diversity effectively and to help them achieve sustainable use of marine resources. The model developed in this project and innovative district-level approach taken here to community-based management and protection of marine biodiversity are expected to have wider application in Samoa, the Pacific Islands region, and globally.

The project is being carried out in three phases over a

five-year period to allow sufficient time for community organization, consensus building, and capacity development. The project's first phase addresses management planning, and entails preparation of the MPA management plan, design of alternative income-generation activities, strengthening of capacity, and building of environmental awareness. The second phase involves implementation of the plans designed in the previous phase. The final project phase will entail monitoring, review, and evaluation to ensure activities' sustainability.

Project benefits include halting and reversing environmental degradation, and contributing to 1) a continued recovery in coral reefs, 2) an increase in productivity of target fish species, 3) no further decrease in the current area of mangroves, and 4) no further decrease in the populations of threatened species. (Implemented by the World Bank.)

## SRI LANKA

# Conservation and Sustainable Use of Medicinal Plants

**Focal Area:** Biodiversity  
**Co-Financing:** \$20.40 million

**Project Dates:** 1997-2003

**GEF Grant Financing:** \$5.42 million

More than 500 species of Sri Lanka's native flora have been used in traditional medicine, and at least 189 medicinal plant species are found nowhere else in the world. Sri Lanka's valuable and diverse medicinal plants are threatened by overcollecting, habitat degradation, unsustainable agricultural practices, and lack of information and awareness. This project is working to conserve globally and nationally significant medicinal plants, their habitats, species, and genomes, and promote their sustainable use in Sri Lanka.

One set of project activities addresses the expansion of in-situ conservation by establishing three medicinal plant conservation areas. Villages in and around these conservation areas will be the focus of community organization to plan and implement such activities as management planning and inventories of plants and their uses. The project will identify alternative ways

for local people to generate income instead of current destructive collection practices. A second project component involves expansion of ex-situ conservation by addressing the need for increased nursery capacity for and cultivation of medicinal plants. A final component addresses information and institutional support; this involves supporting the compilation of existing information on medicinal plants into a database and promoting an appropriate legal and policy environment.

Project benefits include 1) the conservation of rare and endemic medicinal plants and improved supply of medicinal plants, 2) the preservation and augmentation of knowledge on medicinal plants and their sustainable cultivation and conservation, and 3) increased choices of livelihood and better income-earning opportunities for home gardeners and plant cultivators. (Implemented by the World Bank.)

## SRI LANKA

# Conservation of Biodiversity through Integrated Collaborative Management in Rekawa, Ussangoda, and Kalametiya Coastal Ecosystems

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 2000–	<b>GEF Grant Financing:</b> \$750,000
<b>Co-Financing:</b> None		

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The objective of this project is to ensure the conservation and sustainable use of biodiversity through the development of a collaborative management system that actively involves local communities, NGOs, and government agencies. The subject area is characterized by a rich floral and faunal diversity containing mangroves, lagoons, and beach habitats of national and international importance. Five of the world's seven species of marine turtles—all classified as globally endangered—come ashore to nest in Sri Lanka.

The project is collecting data on biodiversity and the socioeconomic situation through regular rapid assessment surveys and targeted research. A collaborative management framework is being developed to control destructive livelihood practices and encourage sustainable alternatives. Additional project activities address the strengthening and imple-

mentation of conservation initiatives of coastal biodiversity with support and participation from local communities through conservation programs for globally threatened marine turtles, mangroves, and avifauna. The project is also establishing a committee for enhancement of policy-level coordination and a biodiversity task force for improved law enforcement.

Project benefits include 1) establishment of conservation programs for globally significant biodiversity at the project site and of local biodiversity units to enhance community awareness, 2) establishment of efficient policy-level coordination and law enforcement to improve biodiversity conservation, and 3) an in-place effective monitoring system to assess development activities and their impact on biodiversity. (Implemented by the United Nations Development Programme.)

## SRI LANKA

# Conservation of Globally Threatened Species in the Rainforests of Southwest Sri Lanka

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 2000–	<b>GEF Grant Financing:</b> \$750,000
<b>Co-Financing:</b> None		

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The rainforests of southwestern Sri Lanka are truly primeval, and some of the species they contain are considered to be relics of the ancient continent of Gondwanaland. Because of their rarity, some species have not been seen for over a hundred years and were rediscovered only recently during a biodiversity assessment of the country's forests. The objective of this project is to protect the ecosystems in the Sri Lankan rainforests of Sinharaja and Kanneliya-Dediyagala-Nakiyadeniya (KDN) through community co-management.

Project activities address integrated buffer zone community development, focusing on biodiversity conservation and livelihood issues; the objective is to have a buffer zone community, as well as society at large, cooperating in the conservation of the selected rainforest ecosystems harbor-

ing globally threatened species. The project also aims to develop a suitable model for securing collaboration between the local community, state agencies, and other stakeholders in managing the rainforest ecosystems; in this way, institutional mechanisms will be strengthened to involve the community in decisionmaking. Other project activities involve securing the sustainable use of nontimber forest products, and protecting forests from encroachment and illicit logging.

Project benefits include 1) definition of new boundaries for the Sinharaja and KDN forests, 2) stabilization of redefined conservation forest boundaries and forest resources, 3) satisfactorily functioning community participation management model, and 4) unauthorized removal of fauna and flora stopped in the Sinharaja and KDN forests. (Implemented by the United Nations Development Programme.)

## SRI LANKA

# Protected Areas and Wildlife Management

**Focal Area:** Biodiversity  
**Co-Financing:** \$24.50 million

**Project Dates:** 2000–

**GEF Grant Financing:** \$10.20 million

This project aims to promote organizational and managerial reform; strengthen protected area (PA) management capacity; encourage policy and legislative change to enable sustainable management of the national PA system in multistakeholder partnerships; and establish, endow, and operationalize a trust outside direct government control to finance facilitation of community strengthening and partnership building around PAs.

Project activities address enhancing institutional capacity for PA management, participatory adaptive management of pilot PAs, collaborative conservation planning, and sustainable financing for community partnership building. Project outcomes will include preserving species by maintaining ecosystem integrity; creating replicable models of community partnership agreements on PA and wildlife management by means of a permanent process to promote partnership building; putting into effect replicable processes of adaptive

PA management targeted to specific threats and opportunities; establishing replicable approaches to dealing with the root causes of threats, especially poverty and community weakness, through community empowerment, partnership agreements, and benefit sharing; and forging long-term international partnerships between governmental conservation agencies and NGOs.

Project benefits include 1) management, technical, and ecotourism capacity enhanced and wildlife biodiversity monitoring and evaluation strengthened; 2) PA management plans adapted and consolidated, implementation facilitated, and ecotourism products and services developed; 3) national biodiversity conservation action plan and endangered species/recovery plans prepared; and 4) sustainable financing for participatory community mobilization and planning established. (Implemented by the World Bank/ADB.)

## SRI LANKA

# Wildlife Conservation and Protected Areas Management

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 1991–1999

**GEF Grant Financing:** \$4.10 million

This project was intended to strengthen the technical and management capabilities of Sri Lanka's Department of Wildlife Conservation (DWC) and to establish a national protected area network.

Under project auspices, DWC's National Wildlife Training Center partnered with a leading Sri Lankan university and the Wildlife Institute of India to develop a fully operational in-service training facility for rangers, assistants, and wildlife guards. Scientific management plans were developed covering nearly half of the total protected area managed by DWC and based on resource inventories of the physical environment, biological communities, and socioeconomic factors. The plans focused on strategies and measures for managing the protected areas while benefiting local communities, and included an investment strategy for financing implementation. New protected areas were established in ecosystems,

such as the tropical wet zone and the coastal zone, that were not previously represented in Sri Lanka's portfolio of protected areas. Public information campaigns helped increase understanding of the importance of biodiversity conservation. Local communities were involved in all aspects of the project, from resource inventory to management plan formulation, to ensure integrated implementation of the management plans.

Project benefits include 1) improved protection and increased representation of the range of ecosystems and biomes in Sri Lanka's protected areas; 2) enhanced local support for protected area management, as well as local economic benefits; and 3) enhanced capacity of DWC staff, resulting in improved motivation and morale. (Implemented by the United Nations Development Programme.)

## SRI LANKA Energy Services Delivery

**Focal Area:** Climate Change  
**Co-Financing:** \$49.40 million

**Project Dates:** 1996–2002

**GEF Grant Financing:** \$5.90 million

The high costs of extending the energy grid to dispersed rural populations are prohibitive. As a result, the government of Sri Lanka has demonstrated interest in exploring a wider range of energy technologies and systems, including renewable energy and demand-side management. The objectives of this project are to encourage the use of environmentally sound renewable energy technologies by the private sector, NGOs, and cooperatives for grid and off-grid energy services; reduce long-term demand for electricity through demand-side management; and mitigate carbon dioxide emissions.

The project has three components. A credit component offers medium- and long-term financing through participating credit institutions to non-governmental groups for solar photovoltaic and village hydro pre-grid electrification, rehabilitation of grid-connected mini-hydro sites on tea estates, and other renewable energy investments. The second com-

ponent demonstrates the commercial viability and economic potential of wind power and catalyzes future private sector wind farm development. The third component provides training and technical support for renewable energy and energy-efficiency efforts by the public and private sectors.

Project benefits include 1) adding 26 megawatts of environmentally sustainable generating capacity for up to 32,000 rural customers, 2) developing sustainable markets for grid and off-grid renewable energy technologies, 3) strengthening demand-side management capabilities of the Ceylon Electricity Board and Sri Lankan architecture and engineering community, 4) incorporating renewable energy technologies and energy-saving measures in planning for power generation, and 5) reducing greenhouse gas emissions. (Implemented by the World Bank.)

## SRI LANKA Renewable Energy and Capacity Building

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 1996–2001

**GEF Grant Financing:** \$1.51 million

This project sought to remove barriers to expanded and sustainable use of renewable energy in Sri Lanka. It facilitated and accelerated the use of renewable energy technologies and energy-efficient measures, thus reducing the need for additional fossil fuel thermal power stations. This was achieved by 1) identifying resource capabilities and pre-investment issues and options for hydro, wind, and biomass sources as well as establishing the capacity to replicate the analysis in other locations; 2) building capacity of the hydro industry in design, manufacture/ procurement, and maintenance; 3) providing training to energy management professionals in best practices, and 4) providing training to student professionals in industrial and commercial energy-efficiency technologies.

Under project auspices, a mini- and small hydro project were prepared at a selected water basin, followed by a training seminar; and a wind assessment and project were prepared for

two promising regions of the country. The effectiveness of applied research was increased through trade shows, demonstrations, and technology transfer materials for in-house commercialization training. Training was provided in the small hydro industry. Energy audit and management capabilities were strengthened in the commercial and industrial sectors, and equipment for renewable energy was tested for performance.

Project benefits include 1) reduced GHG emissions by expanding the use of renewable, nonfossil fuels and improving energy efficiency in the commercial and industrial sectors; 2) reduced reliance on petroleum imports for thermal power generation; 3) improved capabilities of the private hydro development sector in isolated location sites; and 4) sound project-ready investment information provided to private renewable energy developers. (Implemented by the United Nations Development Programme.)

## TAJIKISTAN

# Program for Phasing out Ozone Depleting Substances

**Focal Area:** Ozone Depletion  
**Co-Financing:** None

**Project Dates:**

**GEF Grant Financing:** \$990,000

The goals of this project are 1) to assist Tajikistan in the rapid phase-out of ODS, consistent with international efforts in this direction; and 2) to enable the phase-out of the 91 metric tons of annual ODS consumption required for compliance with Montreal Protocol control provisions. To these ends, the project aims to implement a comprehensive national program for recovery/recycling of refrigerants in the refrigeration and air conditioning subsectors. Recovery equipment and manual recovery pumps and recovery bags will be distributed to the country's larger CFC-12 users, and five sets of recycling equipment will be strategically distributed around the country. A system for monitoring the quantity of CFCs recycled is planned to ensure program success.

The project is using a train-the-trainers approach to provide technical information and training on good servicing

practices to technicians in the refrigeration sector in order to reduce CFC consumption in the servicing of refrigeration units. This training is critical to effective CFC phase-out since the refrigeration subsector consumes the majority of CFCs in the country. This project is expected, on completion, to eliminate a total of 8.61 ODP metric tons/year of CFC-12.

Key project outcomes include 1) making available suitable methods to reduce ODS consumption, 2) eliminating 107.3 metric tons of ODS within three years, 3) installing the equipment and processes and introducing the practices envisaged in the subprojects, and 4) establishing an appropriate regulatory framework to confirm compliance. (Implemented by the United Nations Development Programme and the United Nations Environment Programme.)

## THAILAND

# Building Chiller Replacement Program

**Focal Area:** Climate Change  
**Co-Financing:** \$88.00 million

**Project Dates:** 1998-2001

**GEF Grant Financing:** \$2.50 million

This project seeks to remove barriers preventing widespread replacement of low-energy-efficiency building chillers using CFCs as refrigerant with highly energy-efficient, non-CFC chillers in the Thai market. It therefore helps address two global atmospheric problems—global warming and stratospheric ozone layer depletion.

The project will pilot the replacement of about 24 CFC chillers that can demonstrate actual energy savings, cost recovery arrangements, and appropriate financing mechanisms. Using an interest-free concessional loan, the project intends to demonstrate that the high up-front cost of the chiller—the first key market barrier to chiller replacement—can be recovered within a four- to five-year period through savings gained from improved energy efficiency. With proper credit arrangements, the barrier caused by high up-front costs can

be overcome. To overcome the second key barrier, perceived technology deficiency, the actual energy consumption of the 24 chillers will be measured before and after replacement in order to demonstrate actual savings of the new chiller technology in a tropical climate. Optimal design and size and proper maintenance will be important criteria in the selection of the 24 CFC chillers. Currently, oversized chillers and inadequate maintenance have contributed to high energy consumption. Technical staff will be trained in technical and preventive maintenance aspects. These and related measures will help overcome the third barrier of limited technical capacity.

Project benefits include 1) more widespread use of energy-efficient chillers in the chiller market as a whole, and 2) a significant reduction in both GHG emissions and ODSs. (Implemented by the World Bank.)

## THAILAND

# Promotion of Electricity Energy Efficiency

**Focal Area:** Climate Change  
**Co-Financing:** \$179.50 million

**Project Dates:** 1991–2000

**GEF Grant Financing:** \$9.50 million

This project was designed to achieve electricity savings in the residential, commercial, and industrial sectors, thereby offsetting the need for the equivalent amount of fossil fuel power generation and avoiding additional carbon dioxide, nitrogen oxide, and sulfur dioxide emissions. It was also intended to develop the capacity of the electric power sector to achieve those savings and to generate interest in and commitment to similar demand-side management programs by utilities in other developing countries.

The project involved educational activities, financial incentives, laboratory testing, research, and promulgation of codes and standards. Specifically, it consisted of four activities: 1) increasing consumer awareness of and investment in energy-efficient technologies by providing information on energy-efficient products, financial incentives to product

manufacturers to make the products available, and financial incentives to consumers to purchase the products; 2) establishing laboratories for testing and rating the energy efficiency of equipment and instituting procedures for monitoring and verifying equipment performance in the field; 3) developing and promulgating building and appliance codes to allow enforcement of minimum efficiency standards; and 4) continued pursuit of technological improvements and their adaptation to Thai conditions.

Project benefits include 1) an annual reduction of carbon dioxide emissions from the power sector by as much as 13 percent by 2001, 2) freed-up investment capital for other development needs, 3) deferring or obviating the need for new fossil fuel-fired power, and 4) reduced electric bills for consumers. (Implemented by the World Bank.)

## THAILAND

# Removal of Barriers to Biomass Power Generation and Co-generation

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 1999–

**GEF Grant Financing:** \$6.83 million

Although Thailand is noted for its abundant biomass resources, it is currently heavily dependent on fossil fuels. This project primarily focuses on residues that power plants will use without causing deforestation. It will assist local commercial partners in their efforts to reduce annual GHG emissions of up to 4 million tons of carbon by accelerating the growth of biomass co-generation and power generation technologies to replace fossil fuel consumption in Thailand. The project's goals are to 1) build capacity to provide information and services to potential biomass project investors, 2) improve the regulatory framework to provide incentives to biomass co-generation and power projects, 3) create easy access to commercial financing for biomass co-generation and power projects, and 4) facilitate the implementation of two initial biomass power pilot plants through support for commercial guarantees which will reduce technical risks associ-

ated with the deployment of this new technology.

To achieve its goals, the project is establishing a "one-stop" clearinghouse for biomass co-generation and power generation in Thailand. It is improving financial incentive policies to biomass co-generation projects, establishing a biomass power financing mechanism, and providing contingent financing to biomass power pilot plants.

The project benefits include 1) building capacity to provide technical information and advisory services, 2) creating sustainable demand for and supply of biomass power systems, 3) improving power pricing policies for biomass power projects, 4) facilitating a policy dialogue for smooth adoption and implementation of the tariff policy, and 5) ensuring the commercial viability of future biomass projects. (Implemented by the United Nations Development Programme.)



## TURKMENISTAN

### Improving the Energy Efficiency of the Heat and Hot Water Supply

**Focal Area:** Climate Change  
**Co-Financing:** \$960,000

**Project Dates:**

**GEF Grant Financing:** \$750,000

The heat and hot water supply systems in Turkmenistan suffer from old and obsolete technologies and the lack of resources to properly maintain, rehabilitate, and/or reconstruct these systems. According to a recent prefeasibility study prepared for one micro-district in the city of Turkmenabad, direct energy savings of approximately 30 percent could be achieved by improving the energy efficiency of the distribution system. Also, according to preliminary estimates, greenhouse gas emissions in Turkmenistan will increase by 62 percent by the year 2010 compared to the 1994 value, primarily due to increased energy consumption.

The goal of this project is to reduce GHG emissions by removing existing barriers to the improvement of the country's heat and hot water supply systems. Two pilot projects will be launched in Turkmenabad and the information and lessons learned from their implementation will be compiled, analyzed,

and disseminated. The capacity of local experts to prepare master plans and feasibility studies to improve energy efficiency will be built. Additionally, workshops and seminars will be held to increase decisionmaker awareness regarding available technologies and measures to improve the energy efficiency of the municipal heat and hot water supply. Recommendations for new institutional and incentive mechanisms—and, as applicable, for the supporting legal and regulatory changes—will be developed for reducing energy consumption on the demand side and providing assistance to local municipalities to launch these mechanisms.

The project should result in a direct reduction of GHG emission through the two pilot projects (0.01 MT C before 2010, and an estimated reduction to 0.2 to 0.5 MT C by 2020). (Implemented by the United Nations Development Programme.)

## TURKMENISTAN

### Program for Phasing out Ozone Depleting Substances

**Focal Area:** Ozone Depletion  
**Co-Financing:** \$20,000

**Project Dates:** 1998–

**GEF Grant Financing:** \$520,000

The main objective of this project is to assist Turkmenistan in the rapid phase-out of ODS consistent with international efforts in this direction. The project targets priority ODS phase-out activities in the refrigeration sector; it also provides modest technical assistance at the institutional level to facilitate implementation of the Country Program.

The project consists of a refrigerant recovery/recycling component and a technical assistance and training component. Under the first component, a comprehensive national program for recovery and recycling of refrigerants in the refrigeration and air conditioning sector is being implemented as a part of a national refrigerant management plan. The project's second component consists of four activities: 1) providing assistance for training trainers for refrigeration ser-

vice, 2) training in monitoring and control of ODS for customs officers, 3) monitoring the refrigerant management plan, and 4) maintenance and development of an institutional framework within Turkmenistan for implementing the Country Program.

Key project outcomes include 1) meeting national obligations under the Montreal Protocol; 2) avoiding economic and social disruption when imported ODS are no longer available for industrial, commercial, and consumer applications; and 3) strengthening institutional capacities for monitoring and regulatory enforcement of ODS phase-out. (Implemented by the United Nations Development Programme and the United Nations Environment Programme.)

## UZBEKISTAN

# Establishment of the Nuratau-Kyzylkum Biosphere Reserve as a Model for Biodiversity Conservation

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 2000–

**GEF Grant Financing:** \$750,000

The goal of this project is to conserve the globally important biodiversity, landscapes, and cultural assets of the Nuratau Mountain Range and the adjacent Kyzylkum Desert and to provide a model for protected area development in Uzbekistan and the region. To this end, the project's main objectives are to 1) promote a new and more durable approach to biodiversity conservation within the project area through the integration of conservation and sustainable natural resource development; 2) promote local-level awareness, ownership, capacity, and commitment to the process of achieving biodiversity conservation and sustainable development in the project area; 3) to provide a model for new approaches to the conservation of biodiversity in Uzbekistan and the region.

The project primarily entails the establishment of the Nuratau-Kyzylkum Biosphere Reserve and the subsequent

building of public, local authority, and rural community awareness, support, and participation in biodiversity conservation and sustainable use as well as of capacity building of local authorities, key decisionmakers, and rural communities to plan and play a role in the conservation of biodiversity and sustainable use of natural resources.

Key project outcomes will include increased public/decisionmaker awareness and valuation of biodiversity, increased stakeholder capacity to play a role in conservation and appropriate use of biodiversity resources, demonstration and testing of methods and approaches to address major threats to biodiversity, and a heightened profile of the area and increased capacity and opportunity to attract other relevant and complementary initiatives. (Implemented by the United Nations Development Programme.)

## UZBEKISTAN

# ODS Phase-out Program

**Focal Area:** Ozone Depletion  
**Co-Financing:** \$150,000

**Project Dates:** 1998–2002

**GEF Grant Financing:** \$3.32 million

The objective of this project is to support the Republic of Uzbekistan in the rapid phase-out of ozone depleting substances consistent with international efforts. The project will help the republic meet its phase-out obligations under the Montreal Protocol by the year 2002 and ensure availability of technical assistance to expedite implementation of the country program.

The project targets priority ODS phase-out activities in the refrigeration sector and also proposes modest technical assistance at the institutional and enterprise levels to facilitate implementation of the country program. The project is formulated as a framework project, comprising one enterprise-specific technology conversion subproject in refrigera-

tion, a recovery and recycling subproject for refrigerants, and modest institutional strengthening and technical assistance and training components.

Expected project outcomes include 1) complete phase-out of an annual consumption of 315 MT ODS in accordance with country program milestones, including substitution of CFC in domestic refrigerator production; 2) ODS refrigerant recovery and recycling; 3) introduction of ODS-free refrigerants in the RAC servicing sector; and 4) implementation of monitoring, control, and enforcement measures. (Implemented by the United Nations Development Programme and the United Nations Environment Programme.)

## VIETNAM

# Conservation Training and Biodiversity Action Plan

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 1992–1999

**GEF Grant Financing:** \$3.00 million

This project focused on helping the government of Vietnam implement national and local programs to protect areas of high biodiversity. It consisted of two components: conservation training for biodiversity preservation through effective management of protected areas and preparation of a biodiversity action plan. The project worked in partnership with leaders of local communities that depend on the parks' natural resources.

To meet its goals, the project formulated and obtained approval of a biodiversity action plan. The plan outlines specific actions, time frames, and budgets necessary to preserve Vietnam's biodiversity and protect remaining natural forestlands through a system of protected areas, community buffer zones, conservation measures, and sustainable use of biological resources located outside of the protected areas. Development and approval of the plan greatly increased public awareness of biodiversity conservation. The project

also established conservation training centers at three national parks, and facilitated training in biodiversity conservation methods and techniques and other environmental issues for park guards, rangers, area managers, technicians, scientists, and provincial and central government staff. By the project's end, 1,045 conservation officials had received training. Finally, the project formed and trained biological survey teams.

Project benefits include 1) preservation of Vietnam's globally significant biodiversity, including many species with potential use in medicine, agriculture, and other areas; 2) enhanced delivery of services by staff of government agencies, NGOs, and universities regarding biodiversity conservation; and 3) improved conditions for villagers living adjacent to protected areas who rely on forest resources. (Implemented by the United Nations Development Programme.)

## VIETNAM

# Creating Protected Areas for Resources Conservation in Vietnam Using a Landscape Ecology Approach

**Focal Area:** Biodiversity  
**Co-Financing:** \$660,000

**Project Dates:** 1995–2003

**GEF Grant Financing:** \$6.04 million

Although Vietnam remains one of the poorest countries in Asia, its forests, waters, and wetlands are rich in flora and fauna, with a high level of endemism and local distinctiveness. This biodiversity is increasingly threatened by agricultural encroachment, population pressures, and unsustainable land use practices. This project aims to implement a landscape ecology approach to protected area management. This involves working toward a fair balance between providing ecologically sound livelihoods and conserving biodiversity, given Vietnam's unique socioeconomic conditions. The project is introducing, developing, and implementing the concept of protected areas for resource conservation (PARC)—that is, development of large and small protected core areas with adjacent sustainable resource use zones—using a participatory approach, an open consultative process, and the appropriate integration of conservation and development.

The project is developing and finalizing management plans for two PARC sites in biologically, environmentally, socially, and economically critical regions. It will implement management plans and community programs for these two PARC sites with ongoing monitoring for progress and impact. Finally, it will evaluate and modify PARC implementation for replication in other areas based on the results.

Project benefits include 1) preservation of endemic and endangered animal species and conservation of globally important biodiversity, 2) provision of important genetic material for agriculture and research, 3) creation of carbon dioxide sinks through tree-planting programs, and 4) demonstration of a model approach to natural resource conservation for replication elsewhere. (Implemented by the United Nations Development Programme.)

## VIETNAM

# Hon Mun Marine Protected Area Pilot Project

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<b>Focal Area:</b>	Biodiversity	<b>Project Dates:</b>		<b>GEF Grant Financing:</b>	\$970,000
<b>Co-Financing:</b>	None				

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Most of the resources Hon Mun inhabitants depend on for a livelihood are being taken from the country's degrading shallow continental shelf area; this has far-reaching environmental and socioeconomic consequences. The goals of this project are to conserve a representative example of internationally significant and threatened marine biodiversity, and enable local island communities to improve their livelihoods and—in partnership with other stakeholders—effectively protect and manage the marine biodiversity at Hon Mun as a model for collaborative marine protected area (MPA) management in Vietnam. The project will develop an effective provincial MPA authority and a system of co-management with local resource users. It will achieve sustainability by building partnerships among stakeholders, establishing a financially self-sufficient management system, and providing long-term socioeconomic benefits to the local communi-

ties that rely on the resources of Hon Mun.

Project activities address participatory planning and management, alternative income generation in order to keep people away from activities associated with excessive resource use, capacity building in the Ministry of Fisheries and other agencies in implementing their responsibilities for marine environmental management, and monitoring and evaluation.

Project benefits include 1) recovery of coral reefs—i.e., an increase in the live coral cover in the MPA; 2) no decrease in mangrove and seagrass cover; 3) a statistically significant and important increase in the productivity of fish and shellfish; 4) no decrease in threatened species; 5) effective management of MPAs; and 6) adoption of commercially viable alternative income-generating activities that promote MPA goals and result in increased income among target group community members. (Implemented by the World Bank.)

## ASIA/PACIFIC

# Asia Least-Cost Greenhouse Gas Abatement Strategy

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<b>Focal Area:</b>	Climate Change	<b>Project Dates:</b>	1991–1997	<b>GEF Grant Financing:</b>	\$9.50 million
<b>Co-Financing:</b>	\$3.50 million				

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Bangladesh, China, India, Indonesia, Mongolia, the Philippines, Pakistan, Republic of Korea, Thailand, and Vietnam account for more than 70 percent of total carbon dioxide emissions and 84 percent of total methane emissions released in Asia. These countries came together in this major project, the objective of which was to build a substantial pool of expertise within the region in estimating and measuring greenhouse gases, identifying technologies and initiatives to reduce these gases, and analyzing economic and social factors to identify cost-effective mitigation options. The project also focused on activities and mechanisms for regional cooperation designed to build capabilities in a number of critical environmental and natural resource disciplines. The ultimate aim was to allow the countries to become self-sufficient in meeting their UNFCCC obligations.

A number of activities were completed to this end, including two regional training workshops on GHG inventories and least-cost plans for mitigating such gases. China and the Philippines completed national workshops on least-cost abatement strategies, and eight other countries conducted national workshops on GHG mitigation options. In addition, empirical measurements were made of methane emissions from rice paddies, a regional database on climate change was created, and various GHG mitigation projects were prepared.

Project benefits include 1) reducing GHG emissions from 12 countries that house half the world's population; 2) building capacity in participating nations on addressing GHG gas and climate change problems; and 3) reducing costs and increasing industrial productivity, improving land use practices, and advancing transport technologies and strategies. (Implemented by the United Nations Development Programme.)

## ASIA/PACIFIC

# Pacific Islands Climate Change Assistance Project

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 1997–2000

**GEF Grant Financing:** \$2.44 million

This project was designed to strengthen capacities of 10 Pacific island countries—Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Samoa, Solomon Islands, Tuvalu, and Vanuatu—through training, institutional strengthening, and planning activities to enable them to meet their reporting obligations under the UNFCCC. The project had six major capacity-building objectives: an inventory of greenhouse gas sources and sinks, an evaluation of mitigation options, national vulnerability assessments, an evaluation of adaptation options, a national implementation plan, and the first National Communication to the Conference of the Parties to the UNFCCC.

The project activities were designed to assist Pacific island countries in identifying climate change mitigation op-

tions and to enable these countries to fulfill their UNFCCC reporting obligations regarding development of inventories of GHG sources and sinks, vulnerability to future climate change and sea level rise, options for adaptation to climate change, development of national implementation plans, and communicating information.

Project benefits include 1) helping the region prepare for the impacts of global warming; 2) increased networking and exchange of information, expertise, and methodologies among countries; 3) increased public awareness of climate change, sea level rise, and coastal management issues; and 4) a sharing of methods, outputs, and experiences at the international level. (Implemented by the United Nations Development Programme.)

## ASIA/PACIFIC

# Building Partnerships for the Environmental Protection and Management of the East Asian Seas

**Focal Area:** International Waters  
**Co-Financing:** 12.33 million

**Project Dates:** 1998–2001

**GEF Grant Financing:** \$16.22 million

This project will enable countries of the East Asian Seas—Cambodia, China, Korea DPR, Indonesia, Malaysia, Philippines, Republic of Korea, Thailand, Vietnam—to collectively protect and manage their coastal and marine environment through intergovernmental and intersectoral partnerships. This objective will require systematic ways to address environmental challenges collectively and a series of well-coordinated, issue-driven programs. The countries will work in partnership to develop environmental management strategies and action plans to deal with land-based pollution, promote closer collaboration in combating environmental disasters, and increase regional commitment to relevant international conventions. The concerns of coastal populations will be considered in any environmental management intervention.

The project's activities involve building capacity to manage coastal areas and subregional sea areas effectively; in-

creasing environmental investments in coastal and marine projects and initiatives; advancing scientific input to decision-making on coastal and marine environmental management; establishing integrated information management systems for coastal management and integrated environmental impact assessments; enhancing collaboration of local NGOs, community-based organizations, religious groups, and environmental journalists on marine environmental protection and management; formulating or strengthening national coastal and marine policies and strategic action programs; and supporting a sustainable regional mechanism to augment regional commitment for implementing international conventions and to catalyze protection and management of the East Asian Seas.

The project will result in enhanced marine environmental protection in the region. (Implemented by the United Nations Development Programme.)

**ASIA/PACIFIC**  
**Implementation of the Strategic Action Program of the  
Pacific Small Island Developing States**

**Focal Area:** International Waters  
**Co-Financing:** \$8.06 million

**Project Dates:** 1998–2004

**GEF Grant Financing:** \$12.29 million

The long-term objective of this project is to conserve and sustainably manage the coastal and ocean resources in the Pacific region by implementing the Strategic Action Program designed for the Pacific small island developing states. The project is focusing on two complementary components: 1) coastal and freshwater basins issues (such as freshwater supplies including groundwater), marine protected area enhancement and development, sustainable coastal fisheries, integrated coastal management and waste reduction strategies; and 2) oceanic fisheries management targeting the Western Pacific Warm Pool Ecosystem (tuna fishery). The project aims for sustainable development of ocean fisheries and will explore options to increase domestic benefits from tuna fishery and divert fishing pressure from overexploited coastal resources.

The project will establish a transboundary management regime and develop a workplan for regionwide implementa-

tion of the SAP. Demonstration projects will be conducted in selected countries to develop techniques to protect freshwater resources. At least three marine protected areas fostering a community-based approach will be created; three demonstration projects will test creation of long-term sustainability of coastal fisheries, and another three community-centered demonstration projects will be conducted regarding waste-reduction activities. The project will provide technical assistance to the Forum Fisheries Agency and to the South Pacific Commission; it will also support fishery monitoring and regional surveillance.

Project benefits include 1) enhanced transboundary management mechanisms, 2) conservation and sustainable use of coastal and watershed resources, and 3) conservation and sustainable yield of ocean living resources. (Implemented by the United Nations Development Programme.)

**ASIA/PACIFIC**  
**Mekong River Basin Water Utilization Project**

**Focal Area:** International Waters  
**Co-Financing:** \$7.20 million

**Project Dates:** 1999–2006

**GEF Grant Financing:** \$11.10 million

This project aims to help the four member states of the Mekong River Commission (MRC)—Cambodia, Laos, Thailand, and Vietnam—implement key elements of the 1995 Agreement on Cooperation for Sustainable Development of the Mekong Basin. It will help the MRC improve and coordinate sustainable water management, including equitable water utilization and protection of the environment, aquatic life, and ecological balance in the basin.

This objective is being achieved by preparing rules for water utilization (in particular, minimum in-stream flows on the Mekong River), and protocols for information exchange and notification/consultation in accordance with the Mekong Agreement. The project is helping the MRC formulate these rules by providing analytical tools (e.g., a basin simulation

model package and knowledge base), building technical capacity in the MRC and riparian states, and facilitating consultations and providing legal expertise. The terms and conditions of the obligations incurred by the MRC member states in adopting different types of rules will be explored during the course of consultations and with the support of an internationally recognized water law expert.

Project benefits include 1) a functional and acceptable package of basin simulation modeling and analytical tools supported by improved databases; 2) a set of recommended rules for water utilization (i.e., minimum dry and wet season flow levels on the Mekong River, notification and review procedures for proposed water uses); and 3) enhanced project and basin management capacity. (Implemented by the World Bank.)

## ASIA/PACIFIC

# Prevention and Management of Marine Pollution in the East Asian Seas

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<b>Focal Area:</b> International Waters	<b>Project Dates:</b> 1993–1999	<b>GEF Grant Financing:</b> \$8.00 million
<b>Co-Financing:</b> \$3.40 million		

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This project is helping participating countries manage East Asia's transboundary marine pollution problem. A fundamental strategy of the project is to demonstrate the effectiveness and modalities of integrated coastal management in tackling marine pollution from land-based sources. This decisionmaking framework and management process involves all major stakeholders.

The project is developing an integrated management framework for land- and sea-based sources of marine pollution and working models on prevention and mitigation of marine pollution from land-based activities. It provides for capacity building at the local and national levels through hands-on experience, practical training programs, technology transfer, and information dissemination. It is harmonizing pollution monitoring and analytical measurement tech-

niques. It is also fostering networking among national scientific institutions, research centers, and organizations involved in marine and coastal monitoring activities, as well as networking of public and private institutions in the region on the legal aspects of marine pollution, the status of national regulations, and implementation of international conventions. The project has launched integrated coastal management programs at Batangas Bay in the Philippines and Xiamen in China; it has also provided coastal management assistance to the littoral states of the Malacca Straits.

Project benefits include 1) reduced coastal and marine pollution, 2) strengthened capacity of governments and institutions, 3) protection of human health in coastal populations, and 4) a model for replication elsewhere in East Asia. (Implemented by the United Nations Development Programme.)

## ASIA/PACIFIC

# Reducing Environmental Stress in the Yellow Sea Large Marine Ecosystem

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<b>Focal Area:</b> International Waters	<b>Project Dates:</b> 2000–2005	<b>GEF Grant Financing:</b> \$14.74 million
<b>Co-Financing:</b> \$10.30 million		

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This project seeks to address problems caused by overfishing and coastal economic development of the Yellow Sea Large Marine Ecosystem. It also looks to contain the effects of climate variability on the ecosystem.

To achieve its objectives, the project is preparing a Transboundary Diagnostic Analysis, National Yellow Sea Action Plans, and a regional Strategic Action Program. A series of consultation meetings are being held at the grass-roots level, aimed at identifying environmental priorities and generating and validating information. These meetings will also serve as forums to acquire widespread support for the SAP and national plan proposals. An awareness-raising program on transboundary environmental issues will be carried out in parallel to the TDA preparation.

Specific project activities involve developing regional strategies for sustainable management of fisheries and mari-

culture, assessing and reducing stress, and SAP implementation; proposing and implementing effective regional initiatives for biodiversity protection; proposing and implementing actions to reduce stress on the ecosystem; and developing and piloting regional institution- and capacity-building activities. The project will also create a network for institutions and individuals, and develop a strategy for awareness and participation.

Project benefits include 1) ecosystem-based environmentally sustainable management and use of the Yellow Sea Large Marine Ecosystem and its watershed; 2) reduced development stress from a densely populated, heavily urbanized and industrialized semi-enclosed shelf sea; and 3) promotion of sustainable development of the ecosystem. (Implemented by the United Nations Development Programme.)

# ASIA/PACIFIC

## Reversing Environment Degradation Trends in the South China Sea and the Gulf of Thailand

**Focal Area:** International Waters  
**Co-Financing:** \$15.77 million

**Project Dates:** 2000–2006

**GEF Grant Financing:** \$16.75 million

The goals of this project are 1) to create an environment in which collaboration and partnership in addressing environmental problems of the South China Sea, between all stakeholders and at all levels, is fostered and encouraged at the regional level; and 2) to enhance the capacity of the participating governments to integrate environmental considerations into national development planning. The project's prime objective is to reverse ongoing trends of environmental degradation in the South Sea and Gulf of Thailand.

The project will result in a series of national and regional management plans for specific habitats and issues, nine demonstration management activities of regional and global significance, a regional management plan for maintenance of

transboundary fish stocks in the Gulf of Thailand, and pilot activities relating to alternative remedial actions to address priority transboundary pollutants and adopted water quality objectives and standards.

Project benefits include 1) adoption of improved mechanisms for regional cooperation in the management of the environment of the South China Sea, 2) jointly agreed actions relating to fisheries and environment in the Gulf of Thailand, 3) adoption of the SAP at a regional level, 4) national-level acceptance of the TDA and SAP, 5) implementation of SAP components, 6) regional database planning and management, and 7) adopted portfolio of priority habitat projects within the region. (Implemented by the United Nations Environment Programme.)

## REGIONAL\*

### Conservation Strategies for Rhinos in South East Asia

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 1993–1999

**GEF Grant Financing:** \$2.00 million

Both the Javan and Sumatran species of rhinoceros in Indonesia and Malaysia are critically threatened and have suffered serious decline as a result of poaching and loss and fragmentation of their habitats. The immediate objective of this project was to prevent further decline of these rhino species in Indonesia and Malaysia and allow them to recover to viable levels. A secondary objective was to strengthen the capacity of each country to implement biodiversity conservation strategies.

The project sought to enhance the capabilities of conservation agencies to arrest and reverse the decline of rhinos through, among other activities, organization, training, and deployment of rhino protection in each country to engage in antipoaching activities and community outreach, train additional units, and serve as models for other rhino areas.

The project attempted to increase involvement by and benefits and incentives for local communities in rhino conservation through formal and informal educational programs, demonstrating to local communities the value of rhino protection and biodiversity conservation; and initiation of a research program to collect data needed to develop an effective community involvement program. Finally, the project formulated a strategic funding plan that linked target donors with specific modules of the conservation, and developed a major long-term, income-generating ecotourism project.

Project benefits include 1) stabilizing rhino populations and reducing poaching activities, 2) improving conservation management structures, 3) promoting local appreciation of and pride in the rhino and its conservation, and 4) boosting private sector involvement in support of rhinoceros conservation. (Implemented by the United Nations Development Programme.)

\*Indonesia, Malaysia.

**REGIONAL\***  
**Central Asian Transboundary Biodiversity Project**

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1997–1999	<b>GEF Grant Financing:</b> \$10.49 million
<b>Co-Financing:</b> Governments, \$2.00 million; bilateral sources, \$1.50 million		

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This project addresses significantly increased pressures on natural resources and biodiversity occurring as part of economic transitions in Kyrgyz Republic, Kazakhstan, and Uzbekistan. Key project goals are to 1) strengthen institutions and protected area systems, 2) provide sustainable income opportunities for local people, and 3) encourage regional cooperation and coordination on biodiversity conservation.

The West Tien Shan Mountains are one of the world's most remarkable areas for biodiversity. While the relevant country governments are committed to realizing the global environmental benefits of biodiversity conservation, budget allocations are insufficient to ensure this result. Project support assists these governments in strengthening national policies, regulations, and institutional arrangements for biodiversity pro-

tection; strengthens protected area systems to ensure effective implementation of biodiversity conservation policy; develops replicable financing mechanisms to meet recurrent costs; provides mechanisms and income-generating activities to sustainably meet the needs of local populations and stakeholders; and supports regional coordination and cooperation aimed at biodiversity protection and standards harmonization relating to protected area management and wildlife.

Key project benefits include 1) increasing effective protection of biodiversity in this species-rich region, 2) helping local people find alternative and sustainable uses of biodiversity, 3) strengthening institutions to conduct biodiversity conservation activities, 4) increasing cooperation and coordination among the three countries on biodiversity conservation. (Implemented by the World Bank.)

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\*Kazakhstan, Kyrgyzstan, Uzbekistan.

**REGIONAL\***  
**South Pacific Biodiversity Conservation Program**

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<b>Focal Area:</b> Biodiversity	<b>Project Dates:</b> 1991–1996	<b>GEF Grant Financing:</b> \$10.00 million
<b>Co-Financing:</b> None		

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This project was designed to identify and initiate a series of strategic conservation projects in South Pacific countries. Specific objectives included 1) establishing a series of conservation areas that demonstrate protection of biodiversity, ecologically sustainable use of natural resources, and community economic development; 2) protecting threatened/endangered terrestrial and marine species; 3) identifying new areas important to conserving biodiversity and constituting potential conservation areas; 4) improving awareness in Pacific island countries of the importance and means of conserving biodiversity; and 5) improving capabilities and cooperation among different sectors of society and agencies contributing to the conservation of biodiversity of Pacific islands.

To achieve these objectives, the project established a regional biodiversity database and conducted socioeconomic research on income options for local communities. It initiated an agroforestry trial and seven ecotourism projects, and helped develop a whale-watching industry in Tonga. It fostered the sharing of information and, where appropriate, collaborate among biodiversity conservation efforts of several organizations and agencies; trained Pacific island nationals in conservation management and sustainable development; and established monitoring systems. It also launched a successful turtle initiative.

Project benefits include 1) increased prosperity and quality of life for the people of the region, 2) increased knowledge of and access to information on regional environmental issues, and 3) enhanced public awareness and understanding. (Implemented by the United Nations Development Programme.)

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\*Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu.

## REGIONAL\*

# Addressing Transboundary Environmental Issues in the Caspian Environment Program

**Focal Area:** International Waters

**Project Dates:** 1998–2003

**GEF Grant Financing:** \$8.34 million

**Co-Financing:** \$9.98 million

This project will identify priority transboundary issues and country-specific actions to address those issues as part of the Caspian Environment Programme, the overall goal of which is environmentally sustainable development and management of the Caspian environment, including living resources and water quality.

The project's goals are to 1) develop a regional coordination mechanism through institutional framework, capacity building, public awareness, and stakeholder involvement; 2) complete a Transboundary Diagnostics Analysis of priority transboundary water-related environmental issues to guide prioritization for actions and investments; and 3) formulate and endorse a Strategic Action Programme (SAP) and Na-

tional Action Plans as the basis for prioritizing actions to be taken, both baseline and additional.

In achieving these goals, the project will establish strengthened institutional, legal, regulatory, and economic frameworks for SAP implementation; regional information and data management systems; and regional systems for contaminant monitoring and for contaminant abatement and control. It will also strengthen national and regional capacities to design, develop, and implement integrated coastal area management; to adapt to water level fluctuations; to combat coastal desertification and land degradation; and to provide effective emergency response to oil pollution. (Implemented by the United Nations Development Programme, the United Nations Environment Programme, and the World Bank.)

\*Azerbaijan, Iran, Kazakhstan, Russian Federation, Turkmenistan.

## REGIONAL\*

# Baltic Sea Regional Project, Phase I

**Focal Area:** International Waters

**Project Dates:**

**GEF Grant Financing:** \$5.85 million

**Co-Financing:** \$6.60 million

This project aims to help Estonia, Latvia, Lithuania, and the Russian Republic restore the Baltic Sea ecosystem. Key project goals are to 1) provide the three Baltic Sea cooperating international bodies—the Helsinki Commission, the International Baltic Sea Fisheries Commission, and the International Commission for the Exploration of the Sea—and recipient countries with tools for sustainable agricultural, coastal, and marine management; and 2) improve the social and economic benefits of the farming, coastal, and fishing communities.

The project seeks to increase sustainable biological productivity, improve coastal zone management, and reduce agricultural nonpoint source pollution through the introduction of ecosystem-based approaches for land and coastal

and marine environmental management. Project activities cover management of living marine resources, land and coastal management, institutional strengthening and capacity building, and project management.

Key project benefits include 1) improving economic welfare and living standards within the pilot watersheds and coastal communities; 2) increasing awareness of environmental issues related to coastal and marine issues; 3) continuing use of sustainable agriculture practices by significant numbers of farmers, with notable environmental quality improvements in Baltic Sea ecosystems; 4) instituting national, integrated coastal zone management based on sound technical inputs to the political agenda; and 5) establishing a comprehensive, integrated regional approach for ecosystem-based management practices. (Implemented by the United Nations Development Programme and the World Bank.)

\*Estonia, Latvia, Lithuania, Russian Federation.

## REGIONAL \*

# Black Sea Environmental Management

**Focal Area:** International Waters  
**Co-Financing:** \$23.30 million

**Project Dates:** 1992–1996

**GEF Grant Financing:** \$9.30 million

This project sought to mitigate severe degradation of the Black Sea and related major ecological, economic, and health problems. Key project goals were to 1) strengthen regional and national capacities to manage the Black Sea, 2) develop a policy and legislative framework to control pollution and enhance biodiversity, and 3) facilitate sound environmental investments.

The project was designed to catalyze revitalization of the Black Sea ecosystem by strengthening management capacities at national and regional levels and by securing holistic and integrated regional policies. It worked to enable participating countries to implement policies agreed upon in the Bucharest Convention, draft Odessa Declaration, and a fish-

eries convention, under discussion at the project's launch. The project helped foster new policies and leverage \$200 million to initiate a program of effective investments to control and abate pollution and stimulate environmentally acceptable development.

Key project benefits included 1) improving water quality of the Black Sea and rehabilitating its renewable natural resources, 2) improving and protecting public health in the region, 3) providing clean and aesthetically pleasing recreational facilities for tourists, 4) strengthening government and other institutions, 5) improving waste management and stimulating development of key sectors, 6) facilitating sustainable catch quotas for the fisheries industry, and 7) demonstrating a regional approach to improving the quality of an important international water body. (Implemented by the United Nations Development Programme.)

\*Bulgaria, Georgia, Romania, Russian Federation, Turkey, Ukraine.

## REGIONAL \*

# Danube/Black Sea Basin Strategic Partnership on Nutrient Reduction, Phase I

**Focal Area:** International Waters  
**Co-Financing:** \$11.60 million

**Project Dates:**

**GEF Grant Financing:** \$29.70 million

This project establishes a strategic partnership comprised of three elements: 1) Black Sea regional capacity building and technical assistance, 2) Danube River Basin regional capacity building and technical assistance, and 3) Investment Facility for Nutrient Reduction. The partnership will accelerate implementation of countries' adopted action programs that focus on regional and national policy, legal, and institutional reforms.

The Black Sea element of the project aims, among other activities, to reduce nitrogen and phosphorus loading; restore wetland function, improve management of fisheries, and establish a functional management regime for coordinating regional actions; create a mechanism for cooperation with

Danube countries; generate national nutrient-reduction strategies; and conduct the first-ever Black Sea stock assessment.

The Danube Basin element aims, at five-year output, for a 33 percent phosphorus, and 22 percent nitrogen, loading reduction. It also aims to have all Danube countries adopt the policy/legal/institutional reforms contained in their Strategic Action Programs.

Under the investment element, a country dialogue will be established to result in policies addressing nutrient reduction in the agriculture, municipal, and industrial sectors. Danube/Black Sea restoration issues will be included in ongoing Country Assistance Strategy development processes and pilot subprojects in nutrient reduction will be established. (Implemented by the United Nations Development Programme, the United Nations Environment Programme, and the World Bank.)

\*Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Moldova, Romania, Russian Federation, Slovak Republic, Slovenia, Turkey, Ukraine, Yugoslavia.

## REGIONAL\*

# Determination of Priority Actions for the Further Elaboration and Implementation of the Strategic Action Program for the Mediterranean Sea

**Focal Area:** International Waters  
**Co-Financing:** \$4.19 million

**Project Dates:** 1998-2000

**GEF Grant Financing:** \$6.29 million

This project targets inappropriate management of the coastal zone in the Mediterranean region. Key project goals are to 1) implement a strategic action program promoting conservation and sustainable use of marine resources in the Mediterranean region and 2) improve the quality of the marine environment in the Mediterranean region through better shared management of land-based pollution.

By implementing the Strategic Action Program to Address Pollution from Land-Based Activities in the Mediterranean Region (SAP MED), this project helps to implement requirements of the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources.

\*Albania, Algeria, Bosnia-Herzegovina, Croatia, Egypt, Lebanon, Morocco, Slovenia, Syria, Tunisia, Turkey.

It also helps maintain, enhance, and restore the marine environment's productive capacity and biodiversity. Priority actions to prevent, reduce, and eliminate pollution take into account degradation of the marine environment, perturbation of biological diversity, land-based origin, and transboundary causes or effects. Project activities address each major land-based source of pollution and include a detailed analysis of 103 hot spots identified in the SAP MED. Other activities include preparation and adoption of guidelines for developing national action plans to protect the marine environment from land-based activities. The project also ensures participation by NGOs and other local stakeholders.

A key project benefit is improving the quality of the environment in the Mediterranean region. (Implemented by the United Nations Environment Programme.)

## REGIONAL\*

# Developing the Implementation of the Black Sea Strategic Action Plan

**Focal Area:** International Waters  
**Co-Financing:** \$6.96 million

**Project Dates:** 1996-1997

**GEF Grant Financing:** \$1.79 million

This project sought to mitigate the harmful effects of pollution and other human activities threatening the Black Sea, which holds important biodiversity and economic and social value. The key project goal was to develop and implement a strategic action plan for the sea and its basin.

The Black Sea constitutes the only warm water marine resource in Eastern Europe, the only sea connection between Eastern Europe and southern routes, and a vacation spot for 40 million people annually. Sixteen countries with 162 million people generate enough pollution to make this water body the most seriously degraded regional sea on earth. This project was designed to catalyze the long-term, multifaceted process of renewing the biological communi-

ties and environmental quality of the Black Sea by improving water quality, conserving key ecological areas, and integrating environmental concerns into development policies. Bulgaria, Georgia, Romania, Russia, Turkey, and Ukraine endorsed the project in 1996 to strengthen their capacity to implement the Convention on the Protection of the Black Sea Against Pollution, as well as the Odessa Declaration and a fisheries convention under discussion. The project established training facilities, harmonized water quality standards, set emission limits, and led all participating countries to agree on analytical procedures.

Key project benefits included improving and maintaining biodiversity and economic and social values of Black Sea marine resources. (Implemented by the United Nations Development Programme.)

\*Bulgaria, Georgia, Romania, Russian Federation, Turkey, Ukraine.

## REGIONAL\*

# Development of National Implementation Plans to Manage Persistent Organic Pollutants

**Focal Area:** International Waters  
**Co-Financing:** \$3.13 million

**Project Dates:**

**GEF Grant Financing:** \$6.19 million

The objective of this project is to strengthen national capacity to manage persistent organic pollutants (POPs) and assist countries in meeting their obligations under the Stockholm POPs Convention. The project will assist 12 pilot countries in developing a National Implementation Plan (NIP) for POPs management, thus enabling them to reduce and eventually eliminate their POPs emissions. Generic and technical guidelines for the development of NIPs and the adoption of POPs management options will be developed based on the experience gained and the lessons learned in the pilot countries.

These widely applicable guidelines and the experience gained will greatly facilitate the further development of NIPs in other countries. A large number of countries will participate in subregional consultations organized around the pilot countries, such that experience will be shared and other countries encouraged to sign and ratify the Convention and prepare their own NIPs. (Implemented by the United Nations Environment Programme.)

\*Barbados, Bulgaria, Chile, Ecuador, Guinea, Lebanon, Malaysia, Mali, Micronesia, Papua New Guinea, Slovenia, Zambia.

## REGIONAL\*

# Preparation of a Strategic Action Program for the Dnieper River Basin and Development of SAP Implementation Mechanisms

**Focal Area:** International Waters  
**Co-Financing:** None

**Project Dates:** 1998-2001

**GEF Grant Financing:** \$7.26 million

This project aims to reduce threats to the Dnieper River basin caused by power facilities, heavy industry, forest clearance, agriculture, and inadequate urban sewage treatment. The primary project goal is to develop and execute coordinated river basin and strategic action programs.

This project is designed to remedy the serious environmental effects of pollution and habitat degradation in the Dnieper River basin, ensure sustainable use of its resources, and protect its biodiversity. A series of complementary investigative, preventive, and curative actions delineated in a strategic action program for the basin will assist Belarus, Russia, and Ukraine in implementing principles of coordination and cooperation they agreed to in 1992. The project will

strengthen regional and national management capacity, as it intends to establish a transboundary management regime for the basin and assist each country in developing and implementing individual national action plans. The project will also enhance communication among stakeholders and increase public awareness and involvement.

Key project benefits include 1) protecting the quality of an internationally significant water body, 2) protecting the health of regional populations and the biodiversity of regional ecosystems, 3) contributing to experience on comprehensive approaches to rehabilitating river basin systems, 4) and strengthening institutional and human capacities for integrated land and water management and environmental legislation and enforcement. (Implemented by the United Nations Development Programme.)

\*Belarus, Russian Federation, Ukraine.

## REGIONAL\*

# Preparation of a Strategic Action Program and Transboundary Diagnostic Analysis for the Tumen River Area, Its Coastal Regions, and Related Northeast Asian Environs

**Focal Area:** International Waters

**Project Dates:** 1998–2001

**GEF Grant Financing:** \$5.20 million

**Co-Financing:** UNDP/TRADP, \$3.22 million; government, \$2.01 million (in kind); UNDP/ROK, \$250,000

The Tumen River Economic Development Area and its Northeast Asian environs has abundant natural resources and great potential for economic development. Economic growth would help alleviate poverty in the region and provide alternatives to often unsustainable economic activities. It would also bring new dangers that, if unmitigated, would threaten the area's environment and unique biodiversity. The goal of this project was to prepare a Transboundary Diagnostic Analysis and Strategic Action Program; it aimed to protect the area by integrating the use of sound land and water resource management strategies. To do so, the project had to address biodiversity conservation beyond the Tumen River Basin.

Project activities included 1) strengthening existing

mechanisms for regional cooperation in regional, national, and local bodies, in particular, for preparing a Strategic Action Program to protect international waters and biodiversity; 2) preparing a Transboundary Diagnostic Analysis and Strategic Action Program; 3) designing and implementing an awareness-raising program with particular focus on transboundary environmental issues; and 4) strengthening national and regional capacities to implement the Strategic Action Program jointly.

The project's key benefits included 1) protecting unique biodiversity in the river basin and environs, and 2) helping to assure sustainable economic development for the benefit of local populations. (Implemented by the United Nations Development Programme, the United Nations Environment Programme, and the World Bank.)

\*China, Korea DPR, Mongolia, Republic of Korea, Russian Federation.

## REGIONAL\*

# Water and Environmental Management in the Aral Sea Basin

**Focal Area:** International Waters

**Project Dates:** 1997–2003

**GEF Grant Financing:** \$12.00 million

**Co-Financing:** \$59.50 million

This project is striving to mitigate severe environmental damage to the Aral Sea water catchment from years of unsustainable irrigation, which has created difficult economic conditions for people living there. Key project goals are to 1) improve and expand monitoring of the region's environmental problems and 2) develop and implement regional and national strategies and agreements addressing the situation.

The Aral Sea basin is considered a disaster zone by many, as demands on the watershed for irrigation and other purposes have overdrawn water resources. Impact on local communities and economies has been severe, bringing widespread unemployment, lost productivity, and poverty. Affected countries require substantial financial support to ensure their

capacity to address the basin's problems and stay on a course toward sustainable development. This project addresses the causes of overuse and pollution in the basin and supports sustainable management and future natural resource development by implementing the first stage of a regional strategic action plan. This project is only the first step to addressing the root causes of the Aral Sea basin crisis

Key project benefits include 1) preserving biodiversity of international importance and habitat for globally threatened bird and fish species, 2) protecting one of the last remaining wetlands in the former Amu Darya system, 3) testing an efficient and innovative way of combating desertification by creating a wetland buffer zone. (Implemented by the World Bank.)

\*Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan.

## REGIONAL\*

# Promoting Compliance with the Trade and Licensing Provision of the Montreal Protocol in Countries with Economies in Transition

**Focal Area:** Ozone Depletion  
**Co-Financing:** \$40,000

**Project Dates:** 1998

**GEF Grant Financing:** \$690,000

This project aims to improve compliance with the Montreal Protocol among countries with economies in transition (CEITs) and to discontinue their illegal trade in ozone depleting substances. The key project goal is to develop and conduct training for relevant government officials and industry representatives to help them establish, implement, and enforce licensing systems to monitor ozone depleting substance imports and exports.

Ratifying and complying with the Montreal Protocol and its amendments has proved extremely difficult for nations of the former Soviet Union—all CEITs. CEITs need immediate assistance to establish import and export licensing systems

to monitor and control ozone depleting substances and the equipment and technologies that use them. This project is training officers to establish, operate, and enforce licensing systems to bring their countries into compliance with the Montreal Protocol. Activities include regional training workshops that, together with a published training manual, delineate in a practical and comprehensive manner the steps needed to develop and operate a licensing system. The project follows up with CEIT officers to help fine tune regulations and policies developed in the training.

Key project benefits include 1) achieving greater protection of the ozone layer by accelerating phase-out of ozone depleting substances and 2) bringing CEITs into compliance with the Montreal Protocol. (Implemented by the United Nations Environment Programme.)

\*Azerbaijan, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Russian Federation, Slovak Republic, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

## GLOBAL

# Biodiversity Planning Support Program

**Focal Area:** Biodiversity  
**Co-Financing:** Implementing agencies, \$400,000; Government of Switzerland and others, \$400,000

**Project Dates:** 1998–2001

**GEF Grant Financing:** \$3.43 million

This project sought to speed the progress of some countries in fulfilling obligations under the Convention on Biological Diversity. It also aimed to raise awareness in these countries of issues related to the convention. Many countries that have ratified the convention have had trouble effectively implementing the multisectoral planning approach it calls for. The primary goal of this project was to develop the capacity of these countries by providing better information and guidelines on biodiversity planning and strategizing.

This project used the full range of national and global experiences to develop and provide the information, tools, training, and communication needed to develop and implement comprehensive, multisectoral, and timely biodiversity strategies and plans and ensure a smooth transition between development and implementation stages. Activities included

gathering, translating, and disseminating specialized information on biodiversity planning and convention-related issues at the global, regional, and subregional levels; developing and delivering guidelines to countries based on lessons learned, training modules, and biodiversity planning materials; organizing regional workshops for the dynamic and ongoing exchange of experiences and ideas on national biodiversity strategies and action plans.

Key project benefits included significantly strengthening biodiversity planning processes and multisectoral integration, which would ultimately lead to conservation and sustainable use of biological diversity. (Implemented by the United Nations Environment Programme and the United Nations Development Program.)

**GLOBAL**  
**Critical Ecosystems Partnership Fund**

**Focal Area:** Biodiversity  
**Co-Financing:** \$75.00 million

**Project Dates:** 2000–2006

**GEF Grant Financing:** \$25.00 million

This project supports a partnership between GEF, the World Bank, Conservation International, bilateral organizations, private donors, governments, and local communities. The key project goal is to support conservation and sustainable use activities in 21 of 25 priority “hot spots”—areas of the world that harbor a disproportionately large amount (up to 70 percent of total) of terrestrial biodiversity relative to their size, are under substantive threat, and require urgent attention.

GEF support for this partnership is phased in as one-to-one matching contributions with other funders. GEF releases annual amounts of \$5 million toward its overall \$25 million multiyear allocation as the matching funds are approved by the World Bank, and progress reports show continued satisfactory progress in the partnership’s funded activities. The

project seeks to significantly improve biodiversity conservation at specific “hot spots” through more effective action at the ground level. Reform of relevant policies and practices will lead to better alignment of donors, lending institutions, government, and the private sector with biodiversity conservation objectives.

Key project benefits include 1) increasing biodiversity conservation within targeted ecosystems; 2) increasing the capacity of recipient organizations through strategic planning, project management, and project monitoring; 3) providing significant levels of funding to organizations within targeted ecosystems; 4) developing and operating an information and knowledge management system. (Implemented by the World Bank.)

**GLOBAL**  
**Development of National Biosafety Frameworks**

**Focal Area:** Biodiversity  
**Co-Financing:** \$12.34 million

**Project Dates:** 2000–2004

**GEF Grant Financing:** \$26.09 million

This project addresses countries’ needs for adequate legal frameworks and scientific and technical capacity to assess the risk that modified organisms present to the environment and human health. The primary project goal is to assist up to 100 eligible countries in preparing a biosafety framework to meet their obligations under the Cartagena Protocol on Biosafety to the Convention on Biological Diversity.

Biotechnology is described by the Cartagena protocol as having the potential to help solve many of the world’s urgent needs for food, fuel, and fiber supply. However, the use and/or release into the environment of living modified organisms could adversely affect the conservation and sustainable use of biological diversity. This project helps assess these impacts by promoting regional and subregional col-

laboration and information exchange on which to build national biosafety frameworks. It features forums that enable collaboration at the subregional level and ensure availability of the necessary scientific infrastructure. The project highlights the need to identify biotechnological activity at the national level, as well as extent of coverage by countries’ existing laws and regulations. It also seeks to ensure stakeholder involvement in drafting relevant guidelines, regulations, and laws.

Key project benefits include 1) giving participating countries a clear understanding of their obligations under the protocol and convention and 2) ensuring the use of safe biotechnology acceptable to stakeholders. (Implemented by the United Nations Environment Programme.)

## GLOBAL Global Biodiversity Assessment

**Focal Area:** Biodiversity  
**Co-Financing:** \$180,000

**Project Dates:** 1993–1999

**GEF Grant Financing:** \$3.30 million

This project sought to overcome a lack of scientific assessment of biodiversity, which impeded implementation of the Convention on Biological Diversity. Two ad hoc working groups of the GEF Scientific and Technical Advisory Panel on Biodiversity and Conventions and Research proposed a global biodiversity assessment as a way to support the convention and all levels of decisionmaking on sustainable conservation and use. The primary project goal was to prepare the first comprehensive, peer-reviewed assessment of relevant biodiversity theories and issues, based on current scientific knowledge.

This project supported preparation of the Global Biodiversity Assessment, a standard, scientific reference providing an analytical, timely, and updated overview of the most important theories and methodologies related to biodiversity.

The assessment enables countries to better conserve and manage the planet's biological wealth by identifying critical scientific issues of consensus and disagreement, as well as gaps in current knowledge. It complements several past and ongoing biodiversity initiatives (e.g., the Global Biodiversity Strategy developed by the World Conservation Union and World Resources Institute). Results of the assessment were distributed to all governments, relevant scientific bodies, NGOs, and other institutions.

Key project benefits include 1) contributing to international, national, and regional efforts to conserve global biodiversity; and 2) providing a timely, independent, and scientific forum for discussing current biodiversity knowledge, strengthening links among the scientific community. (Implemented by the United Nations Environment Programme.)

## GLOBAL Global Biodiversity Forum, Phase II

**Focal Area:** Biodiversity  
**Co-Financing:** \$900,000

**Project Dates:** 1998–2000

**GEF Grant Financing:** \$750,000

This project aimed to bolster weak participation of a range of stakeholders in implementing the Convention on Biological Diversity. The key goal was to establish an informal mechanism to allow stakeholders to strengthen analysis and debate issues central to implementing the convention. To increase appreciation and participation by industry, government, non-governmental organizations, and communities in conserving and using biological resources in an equitable and sustainable manner, a consortium of organizations developed the Global Biodiversity Forum.

By analyzing and sharing experiences and debating issues and options critical to implementing the convention, the forum would complement and support national, regional, and global governmental activities on biodiversity. The second phase of the Global Biodiversity Forum, supported by this

GEF project, sought to establish a fully operational and coordinated institutional basis for the forum, engage a broader range of more active stakeholders and identify key priorities and gaps in developing and implementing the convention globally to locally, and catalyze new initiatives and partnerships through the forum process.

Project benefits include 1) broadening involvement of independent, public, and business sector partners in convention implementation; 2) catalyzing new cooperative partnerships and initiatives among convention parties; 3) strengthening regional cooperation, initiatives, and input into convention implementation; and 4) fostering information exchange between science and policy workers and among global, regional, national, and local actions. (Implemented by the United Nations Environment Programme.)

## GLOBAL Millennium Ecosystem Assessment

**Focal Area:** Biodiversity  
**Co-Financing:** \$17.61 million

**Project Dates:** 2000–2004

**GEF Grant Financing:** \$7.31 million

This project addresses inadequate social and economic information on ecosystems, particularly the lack of any basis for analyzing trade-offs among the goods and services they provide. Project goals are to 1) improve the overall management of ecosystems and their contribution to human development, 2) inform policy management decisions with the best information available on ecosystem goods and services, and 3) build capacity to undertake integrated ecosystem assessment and to act on findings.

While many ongoing activities to improve degraded ecosystems serve the needs of particular groups, none synthesizes information to answer key questions about present and future human needs for ecosystems' goods and services. This project, known as the Millennium Ecosystem Assessment, makes information on international ecosystem research and assessment activities available to decisionmak-

ers at regional, national, and local levels, to improve the management of ecosystems and their contribution to human development. It will engage the scientific community in synthesizing data to meet the expressed needs of policymakers, international conventions, national governments, the private sector, and others.

Key project benefits include 1) devising a unique institutional arrangement that responds to both the demand and involvement of international and national institutions, 2) facilitating cooperation among scientists in synthesizing data to meet policymakers' needs, and 3) documenting in a comprehensive assessment the scientific underpinning for a wide range of national and international efforts to address environment and development challenges. (Implemented by the United Nations Environment Programme.)

## GLOBAL Alternatives to Slash and Burn

**Focal Area:** Climate Change  
**Co-Financing:** \$7.87 million

**Project Dates:** 1992–1998

**GEF Grant Financing:** \$6.00 million

This project sought ways to mitigate the contributions of slash-and-burn agriculture to global warming, forest destruction, and the poverty of displaced populations. The primary goal was to develop and disseminate sustainable and environmentally sound production systems in tropical forests.

Supplementing the resources of the consortium, national agricultural research systems (NARSs), and non-governmental organizations, this project developed and tested alternatives and ways to reclaim deforested lands. The project also explored policy options, management issues, and institution strengthening. The International Center for Research in Agroforestry proposed the project, coordinated the program globally, and implemented it in coordination with local participants. Completed in December 1995, phase I helped raised the issue's profile in international arenas by estab-

lishing a highly effective multidisciplinary research team, developing tools to assess biodiversity impact, and achieving 150 percent co-funding. Phase II, completed in June 1997, expanded the number of research sites to include forests in northern Zambia, Peru, and Thailand. Phase III will create research sites in Mexico and the Philippines.

Among the key project benefits are 1) reducing greenhouse gas emissions, 2) increasing incomes and improving living standards for farmers who adopt new alternatives, 3) achieving greater produce availability at lower prices for consumers in the long term, 4) achieving long-term conservation of ecosystems rich in natural resources and biodiversity, and 5) having better informed policymakers, scientists, and farmers. (Implemented by the United Nations Development Programme.)

## GLOBAL

# Assessments of Impacts and Adaptation to Climate Change in Multiple Regions and Sectors

**Focal Area:** Climate Change

**Project Dates:** 2000–2004

**GEF Grant Financing:** \$7.85 million

**Co-Financing:** \$4.61 million

This project addresses the limited adaptive capacity and acute vulnerability of developing countries to climate change effects. The key project goal is to enable certain developing countries to attain the technical capacity needed to assess impacts of climate change and options for adaptation.

Projected changes in earth's climate are predicted to have adverse consequences for many developing regions of the world, particularly with regard to water resources, agricultural productivity, ecological systems, and human health. Poor people within these countries are the most vulnerable, lacking not only the technical, financial, and institutional capacity to evaluate climate change impacts, but also the ability to develop and implement cost-effective response and adaptation measures. This project intends to develop that capacity in targeted regions through training, technology

transfer, and interaction with international assessment teams. Using a consistent methodology, the project supports regionally focused research to enhance scientific capacity and provide expertise to governments, the private sector, and other entities developing national and sub-national sectoral and multisectoral policies and adaptation plans.

Key project benefits include 1) enhancing capacity of human resources and skills and facilitating technology transfer in Africa, Asia, Latin America, and the Caribbean and Small Island States; 2) providing financial and technical incentives for sustainable development that enhance environmental protection and preservation; and 3) promoting better public understanding of and concern for the global environment. (Implemented by the United Nations Environment Programme.)

## GLOBAL

# Capacity Building and Infrastructure: Participation in the Assessment, Methodology Development, and Other Activities of the IPCC

**Focal Area:** Climate Change

**Project Dates:** 1994–1997

**GEF Grant Financing:** \$2.80 million

**Co-Financing:** Governments, WMO, UNEP, \$2.90 million

This project sought to implement the U.N. Framework Convention on Climate Change by expanding the limited involvement of experts from developing countries and countries with economies in transition (CEITs) in the work of the Intergovernmental Panel on Climate Change (IPCC). Key project goals were to 1) broaden the scope of IPCC assessments through contributions from all regions of the world, 2) enable developing countries and CEITs to implement the UNFCCC, and 3) build capacity in these countries to contribute to IPCC assessments and methodologies.

IPCC called for including at least one expert from the developing world on each of the writing teams working on its 1994 and 1995 reports. Fifty-nine IPCC writing teams in-

cluded 128 experts from developing countries and 13 from CEITs. Project support enhanced the contributions of these experts through provision of IPCC training workshops and through the experts' participation in integrating and summarizing the work of IPCC working groups. IPCC's second assessment report was completed and approved, and found to be the most comprehensive and authoritative report on the subject. The project has now been successfully completed, along with an independent project evaluation.

Key project benefits include giving parties to UNFCCC a common factual basis on which to formulate their national policy responses under the convention. (Implemented by the United Nations Environment Programme.)

## GLOBAL

# Climate Change Training Phase II: Training Program to Support UNFCCC Implementation

**Focal Area:** Climate Change  
**Co-Financing:** \$500,000

**Project Dates:** 1996–1999

**GEF Grant Financing:** \$2.70 million

As signatories to the UNFCCC, developing countries are committed to taking steps to address greenhouse gas emissions; however, no institutional framework existed in these countries for responding to climate change. This project aimed to build such a framework and enhance the response capacity of developing country signatories.

This project focused on creating a framework in Lithuania, Vietnam, and Zimbabwe using a multisectoral approach to ensure wide acceptance of any resulting national climate change strategy. The program began with development of global and national training for UNFCCC negotiators and proponents, government officials, legislators, business and industry representatives, researchers, scientists, educators, and non-governmental organizations. Program strategy synchronized training within existing processes,

established the groundwork for a future climate change study, facilitated country reporting requirements of the convention, and allowed integration of country-specific and external information. The program posited a participatory decisionmaking process as the most effective way to arrive at effective, well-accepted policies and programs, and help ensure future capacity-building, policy development, and project coordination activities.

Key project benefits include 1) creating an institutional framework within each country to develop a national climate change strategy, 2) laying the groundwork for a full-scale future climate change study, 3) increasing the impact of national policies to implement the UNFCCC, and 4) enhancing global environment benefits. (Implemented by the United Nations Development Programme.)

## GLOBAL

# Directing Investment Decisions to Promote the Transfer of Cleaner and More Climate-Friendly Technologies

**Focal Area:** Climate Change  
**Co-Financing:** UNEP and partner financial institutions, \$180,000

**Project Dates:** 1999–2000

**GEF Grant Financing:** \$750,000

This project aimed to reduce greenhouse gas emissions from inefficient and wasteful energy use in developing countries, and to increase banks' comfort levels with lending for energy-efficient and renewable energy technologies (EE/RETs). Key goals included 1) increasing the awareness of lending institutions and private companies regarding potential economic gains from EE/RETs, 2) removing information barriers and conducting feasibility studies and training workshops on EE/RETs, and 3) providing customized analysis, technical advice, and investment appraisals on EE/RET options.

Banks in developing countries have only recently begun to realize that environmental problems may increase financial risk must be considered in their decisionmaking; however, investment officers and their clients still lack the knowledge and skills needed to assess investments in

projects with an energy-efficient or renewable energy technology component. This project sought to overcome barriers to financing EE/RETs through providing customized advisory and project appraisal services to loan officers and their clients. This approach should be replicable in other markets and sectors and could form the basis for a broad strategic partnership between the private sector and UNEP as the GEF implementing agency. Other activities included development of an interactive appraisal guide to help screen and appraise EE/RET loan projects and compare them with conventional investments.

Key project benefits include reducing greenhouse gas emissions in participating countries through increased use of energy-efficient and renewable energy technologies. (Implemented by the United Nations Environment Programme.)

## GLOBAL Efficient Lighting Initiative

**Focal Area:** Climate Change  
**Co-Financing:** \$35.00 million

**Project Dates:** 1998–2002

**GEF Grant Financing:** \$15.23 million

This project aims to remove barriers to use of efficient lighting products in developing countries, given their potential to save energy and effectively reduce greenhouse gas emissions. The primary project goal is to tailor a variety of financial and informational programs to address market barriers in seven countries.

With economic growth in developing countries, inefficient lighting technology is being installed in more and more homes, commercial buildings, and public lighting applications, causing a significant amount of electricity consumption and associated greenhouse gas emissions. This project is intended to significantly accelerate the penetration of efficient lighting products, such as compact fluorescent lamps (CFLs) or CFL-configured luminaires, into seven countries in Africa,

Asia, Central and Eastern Europe, and Latin America by reducing market barriers. The project combines selective use of financial incentives, utility demand-side management approaches, market aggregation techniques, public education, and innovative consumer financing to encourage greater domestic use of efficient lighting technologies. The project is tailoring its multiple activities to local conditions and markets. Key project benefits include 1) reducing emissions of greenhouse gases and other pollutants; 2) conserving energy costs for consumers and institutions, as well as national energy costs; 3) building the capacity of utilities, municipalities, and private companies for demand-side management programs; and increasing public awareness of the benefits of energy efficiency. (Implemented by the World Bank/IFC.)

## GLOBAL Fuel Bus and Distributed Power Generation Market Prospects and Intervention Strategy Options

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 2000

**GEF Grant Financing:** \$690,000

Fuel cells are a low-emission technology that electrochemically convert a variety of fossil and biofuels or hydrogen into electricity and are suitable for transportation and modular distributed generation applications. Fuel cells are thus seen as a long-term solution to environmental problems owing to their high efficiency and zero emissions of carbon dioxide or any other pollutant.

This project examines global market trends, national priorities, policies, and plans and suggests where fuel cell market interventions could be beneficial in the future. This review and subsequent strategy development will serve as a reference outlook on fuel cell market prospects and will provide publicly available information for national policymakers.

Through a workshop and a series of published reports, the project is addressing the following key information areas: 1) What are the market prospects for fuel cells based on potential bus and power generation applications opportunities? 2) How fast could the cost of fuel cells technology fall with increasing production volume? 3) What intervention strategies would be justifiable to expedite utilization of fuel cells, thereby gaining the global benefits accrued by this market acceleration? 4) Is there an approach to the intervention that will more likely lead to success, and what are the components of that strategy? (Implemented by the United Nations Environment Programme.)

## GLOBAL

# Global Change System for Analysis, Research, and Training

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 1992–1998

**GEF Grant Financing:** \$7.00 million

This project addressed governments' lack information and tools to make adequate policy responses to potential impacts of global change. Key goals were to 1) provide governments with the tools and capability to assess implications of climate change and 2) involve scientific communities in developing countries in international research efforts.

To date, scientists in developing countries have only participated to a limited extent in international efforts to deal with global change and climate warming. The Global Change System for Analysis, Research, and Training (START) was formed to provide a framework for regional collaboration on key scientific issues related to global change. This project creates the institutional framework needed by scientific communities in two of the highest priority regions—Southeast

Asia and northern Africa—to allow their participation in all aspects of the international agenda for global change research emphasizing global warming. The project also provides concerned governments with tools to assess the potential environmental and resource management policy implications of climate change.

Key project benefits include 1) encouraging cross-fertilization within and between the scientific and policy communities on climate change, 2) involving the scientific community in developing countries in all aspects of climate change work, and 3) building capacity of scientific communities in developing regions to carry out the multidisciplinary actions needed to implement global change projects. (Implemented by the United Nations Development Programme.)

## GLOBAL

# Monitoring of Greenhouse Gases Including Ozone

**Focal Area:** Climate Change  
**Co-Financing:** \$1.20 million

**Project Dates:** 1991–1998

**GEF Grant Financing:** \$4.80 million

This project aimed to reduce major gaps in the global data network that measures background concentrations of greenhouse gases and to strengthen the scientific basis for decisions on global warming. While nations continue to debate the issue, scientific data are not yet adequate to provide decisionmakers with the information they need. The primary goal of this project was to expand the global data network on climate change by adding stations in selected remote locations.

Countries selected for assistance in creating or upgrading global monitoring stations were Algeria, Argentina, Brazil, China, Indonesia, Malaysia, and Kenya. The project established monitoring stations in Algeria, Argentina, China, and Indonesia and got stations underway in Brazil and Kenya. The governments of all seven countries agreed to cooper-

ate as needed with other countries in the network. The stations were upgraded to global stations by expanding training and collaborating with interested groups in national agencies and universities.

Key project benefits include 1) more precise information on the role of greenhouse gases and aerosol particles in climate change, 2) better informed choices by policymakers on options to regulate greenhouse gases and aerosols, 3) more accurate monitoring by agencies responsible for ensuring compliance with international conventions and protocols, and 4) better designed strategies, programs, and projects by international agencies to control global warming and ozone depletion. (Implemented by the United Nations Development Programme.)

**GLOBAL**  
**National Communications Support Program**

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<b>Focal Area:</b> Climate Change	<b>Project Dates:</b> TBD	<b>GEF Grant Financing:</b> \$2.16 million
<b>Co-Financing:</b> TBD, \$800,000; Government of Denmark, \$300,000		

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Many countries that are parties to the United Nations Framework Convention on Climate Change lack in-country technical expertise and adequate regional and international information to help them address their obligations to submit national communications to the convention. This situation is often exacerbated by a lack of information on training opportunities available to assist in preparing these communications. Constraints of capacity and information in these countries have made the climate change issue a low priority and have slowed the preparation of required communications. This project is designed to build needed capacity in this area by providing these nations with ongoing technical and other assistance.

This project is working to significantly enhance the capacity of participating non-Annex I parties to prepare their

initial national communications to the UNFCCC through activities designed to improve the quality, comprehensiveness, and timeliness of initial national communications, according to guidelines provided by the Second Conference of Parties. Guidance is provided through a "help desk" for climate change-enabling activities, provision of additional technical assistance, and organization of several thematic and regional exchange workshops.

Key project benefits include 1) enhancing the capacity of participating states to fulfill UNFCCC obligations and 2) providing better training to personnel on issues related to climate change. (Implemented by the United Nations Development Programme and the United Nations Environment Programme.)

**GLOBAL**  
**Renewable Energy and Energy Efficiency Fund**

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<b>Focal Area:</b> Climate Change	<b>Project Dates:</b> 1996-2012	<b>GEF Grant Financing:</b> \$30.00 million
<b>Co-Financing:</b> \$210.00 million		

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This project aims to remove barriers to private investment in renewable and efficient sources of energy with potential for reducing greenhouse gas emissions. The primary project goal is to support investments in private sector projects for renewable energy and energy efficiency.

Renewable and efficient energy projects are relatively small and can be implemented and expanded quickly in receptive environments, offering competitive return rates to private investors. Expansion of renewable and efficient energy sectors is critical to achieving the objectives of the U.N. Framework Convention on Climate Change; however, a number of barriers impede private investment in these sectors, including the high costs and risks of investing in smaller projects. This project will provide US\$30 million to the pro-

posed REEF to catalyze investments in important renewable and efficient energy markets that might not otherwise attract much private investment. Every dollar of GEF funds should leverage 3 to 6 times as much in private and other investments, and 10 to 20 times the amount of GEF funds in total project costs. Replication of successful renewable or efficient energy projects is anticipated.

Key project benefits include 1) reducing greenhouse gas emissions by encouraging use of renewable and efficient energy sources, 2) catalyzing further private investment by introducing proven technologies and project structures in new markets, 3) supporting new types of projects, and 4) engaging new sources of commercial financing. (Implemented by the World Bank/IFC.)

**GLOBAL**  
**Research Program on Methane Emissions from Rice Fields**

**Focal Area:** Climate Change  
**Co-Financing:** None

**Project Dates:** 1991–1998

**GEF Grant Financing:** \$5.00 million

Half the world's population lives in Asia, where 90 percent of the world's rice is grown and consumed, and pressures for higher yields continue to mount. This project aimed to mitigate the environmental effects of expanding rice production, specifically with regard to methane gas emissions. Key project goals were to 1) establish reliable data on the scale and control of methane emissions from major rice-producing regions and 2) foster sustainable rice production that mitigates methane emissions.

Flooded rice fields emit substantial amounts of methane, a greenhouse gas more potent than carbon dioxide in warming the atmosphere. Most approaches to increasing rice yields will also increase methane emissions. This project enlisted the help of the International Rice Research Institute

to develop a project methodology and conduct training and baseline research. It also worked with the National Agricultural Research Systems (NARS) in China, India, Indonesia, Philippines, and Thailand to explore mitigation options in major rice ecosystems by measuring fluxes and verifying promising approaches.

Key project benefits included 1) reduced methane emissions from rice crops, 2) increased capability of NARS to mitigate methane emissions from rice fields, 3) rice technologies that maintain or improve rice productivity, and 4) greater awareness among all stakeholders of the causes of and options for reducing methane emissions from rice fields, leading to concerted response strategies. (Implemented by the United Nations Development Programme.)

**GLOBAL**  
**Solar Development Corporation**

**Focal Area:** Climate Change  
**Co-Financing:** \$40.00 million

**Project Dates:** 1998–2003

**GEF Grant Financing:** \$10.00 million

This project aims to reduce the use of carbon-based fuels in rural households of developing countries, which contribute greenhouse gases to the atmosphere. Key project goals are to 1) accelerate development of rural, off-grid photovoltaic markets in developing countries through solar home systems; and 2) provide technical assistance to photovoltaic-related companies and build awareness of photovoltaic systems.

Despite enormous potential demand for electricity in remote parts of developing countries not linked to electrical grids, use of photovoltaic systems is surprisingly limited. Photovoltaic systems can produce reliable and relatively cost-effective power in the long run when conventional power generation is unavailable—particularly compared to widely used fuels such as kerosene. This project is working to in-

crease delivery of solar home systems to bring environmentally clean electricity to rural households in developing countries. It seeks to overcome key barriers to accelerating the growth of photovoltaic systems in off-grid locations by establishing the Solar Development Corporation to provide both financing and business advisory services.

Key project benefits include 1) displacing greenhouse gas emissions from fossil fuel combustion, 2) mobilizing additional investment capital for photovoltaic systems from private sources, 3) catalyzing further private investment by introducing photovoltaic technology and sustainable business models in new and less developed markets, and 4) promoting replication of these business models and financing approaches by other entities. (Implemented by the World Bank/IFC.)

# GLOBAL Global International Waters Assessment

**Focal Area:** International Waters  
**Co-Financing:** None

**Project Dates:** 1997–2003

**GEF Grant Financing:** \$6.79 million

This project aimed to overcome difficulties in identifying priorities among different international water bodies and threats resulting from lack of comprehensive information on ecological status and causes of degradation of international water bodies. The project's main goal was to develop a comprehensive strategic framework for identifying action priorities for international waters.

This project is developing a comprehensive, strategic framework to assist GEF and its partners in identifying priorities for remedial and mitigating actions that will achieve significant environmental benefits for international waters at national, regional, and global levels. Other assessments have generally lacked the holistic systems approach advocated by GEF and have concentrated on specific thematic issues or regions. Implemented by regional intergovernmental bod-

ies and national institutions, this project will produce a comprehensive and integrated report, entitled the "Global International Waters Assessment" (GIWA), which will cover ecological status and causes of environmental problems of transboundary freshwater basins and their associated coastal and ocean systems. GIWA products will be disseminated globally and regionally, emphasizing their relevance to various societal sectors.

Key project benefits include 1) adding to the value of international waters programs by providing inter-regional comparisons of findings on ecological status and root causes of degradation and 2) reducing the cost of scoping studies for GEF, partner agencies, and donors, enabling application of more funds to direct action. (Implemented by the United Nations Environment Programme.)

# GLOBAL Regional Oceans Training Program

**Focal Area:** International Waters  
**Co-Financing:** \$2.60 million

**Project Dates:** 1991–1998

**GEF Grant Financing:** \$2.58 million

This project aimed to increase developing countries' capabilities in ocean management and protection, to address increasingly serious pressures on the world's oceans. The key project goal was to establish operational centers for an international oceans training institute in four developing countries.

Several developing countries have acquired access to resources of significant economic value from seabed minerals, petrochemical deposits, and fishing grounds within their exclusive economic zones. The challenge lies in devising integrated management skills and technologies to exploit these marine resources, while protecting the ocean environment. This project reinforced the capacity of developing countries to manage their ocean resources by assisting the International Ocean Institute (IOI) in setting up four new operating

centers in Colombia, India, Fiji, and Senegal. These centers develop curricula and train scientists and officials from their respective regions. IOI covered institutional expenses and used the GEF grant to enable these centers to meet the needs of policymakers, institutions, and non-governmental organizations in each region. The centers devised courses and pursued research that was policy-oriented, related to marine affairs, germane to the area, and interdisciplinary and nonproprietary in nature. These operational centers have encouraged local participation and ensured continuity.

Key project benefits include building international expertise, particularly in developing countries, to manage and protect ocean ecosystems and marine resources. (Implemented by the United Nations Development Programme.)

## GLOBAL

# Regionally Based Assessment of Persistent Toxic Substances

**Focal Area:** International Waters  
**Co-Financing:** None

**Project Dates:** 1999–2002

**GEF Grant Financing:** \$3.00 million

This project aims to mitigate environmental damage and future threats from persistent toxic substances (PTS). Key project goals are to 1) present the severity of PTS-related threats at local, national, and global levels; and 2) evaluate and agree on priorities among chemical and related environmental issues at the regional level.

PTS come in the form of pesticides or byproducts of industrial processes and combustion. The effects of their introduction into the environment is a major concern, eliciting the need for a scientifically based assessment to guide the international community in setting priorities for future remedial and preventive action. This project intends to measure the nature and comparative severity of damage and threats at local, national, regional, and global levels, to produce a

scientific assessment of these threats to environmental and human health. Project activities include an evaluation of PTS sources and levels in the environment, the consequent effects on regional plant and human life, the sources' modes of transport over a range of distances, and the existing alternatives, remediation options, and barriers to their good management.

Key project benefits include 1) network building within and between regions, 2) stimulus for research through identification of data gaps, 3) scientific assessment of PTS threats to the environment and human health, 4) support to international conventions, and 5) greater awareness of PTS-related environmental problems in developing countries. (Implemented by the United Nations Environment Programme.)

## GLOBAL

# Removal of Barriers to the Effective Implementation of Ballast Water Control and Management Measures in Developing Countries

**Focal Area:** International Waters  
**Co-Financing:** \$3.83 million

**Project Dates:** 1999–2002

**GEF Grant Financing:** \$7.61 million

This project aims to help developing countries reduce the transfer of harmful organisms from ship ballast waters. Key project goals are to help six developing nations address the need for effective management and coordination, monitor activities, increase stakeholder awareness and education, remove barriers to progress, and identify opportunities for self financing and recruitment of additional donors to ensure long-term sustainability.

The project supports effective country-based demonstration projects at specified ports within the developing nations of Brazil, China, India, Iran, South Africa, and Ukraine. Regional task forces help ensure regional involvement in carrying out project activities. The project seeks to increase the extent to which ships calling on developing country ports adhere to international guidelines and to help developing

countries define programs necessary to implement an anticipated ballast water annex to the MARPOL Convention or a new water ballast convention.

Key project benefits include 1) establishing a project coordination unit; 2) defining generic and possibly country- and port-specific monitoring programs and strengthening monitoring structures; 3) removing barriers to establishing ballast water management plans; 4) establishing generic and possibly country- and port-specific programs to increase the rate of compliance with international guidelines; 5) identifying opportunities for increased self-financing during and after the project; and 6) drafting a legally binding annex to MARPOL or a new convention. (Implemented by the United Nations Development Programme.)

## GLOBAL

# Role of the Coastal Ocean in the Disturbed and Undisturbed Nutrient and Carbon Cycles

**Focal Area:** International Waters  
**Co-Financing:** \$460,000

**Project Dates:** 1998–2002

**GEF Grant Financing:** \$720,000

The goals of this project are to 1) assemble estimates of the impacts of nutrient enrichment on coastal waters and estimates of the changes in regional and global biogeochemical cycling of nutrients and carbon flux from coastal and shelf seas to the atmosphere; 2) assist governments in assessing the role of their coastal waters as sinks and/or sources of carbon; and 3) thus resolve scientific uncertainties concerning the global carbon cycle.

The project's activities promote the use of Land-Ocean Interactions in the Coastal Zone (LOICZ) models, guidelines, and data by large numbers of developing country scientists. Specifically, the project is convening a series of 8 to 10 regional workshops, widely distributing the LOICZ modeling guidelines, providing training to developing country scientists in guideline application, establishing a network of modeling advisors in the developing regions, convening thematic

workshops to develop budgetary generalizations for major coastal system types, and convening a global synoptic workshop. Additionally, individual scientists and institutions will contribute data and models to the LOICZ website, substantially enlarging coverage of the world's coastal seas.

This project will result in several hundred empirical models of carbon and nutrients in undisturbed and disturbed (polluted) coastal systems that will be of value at the local and national levels in assessing the state of eutrophication and carbon source/sink status of the coastal ocean. Up-scaling, using model-derived empirical data as surrogate information, will provide regional and global estimates of carbon flux required for balancing the global carbon budget and assessing the role of the coastal ocean in the global carbon cycle. (Implemented by the United Nations Environment Programme.)

## GLOBAL

# Strengthening Capacity for Global Knowledge-Sharing in International Waters

**Focal Area:** International Waters  
**Co-Financing:** \$4.80 million

**Project Dates:** 1998

**GEF Grant Financing:** \$5.25 million

This project aimed to improve implementation of international agreements and measures on international waters, and to better integrate these issues in national planning processes. Key project goals were to 1) increase opportunities for and improve access to knowledge sharing on international waters issues and 2) develop training courses on integrating these issues into regional and national planning.

Human demands and activities are threatening valuable natural resources inherent in the earth's oceans and freshwater basins. While response to these problems has taken many forms, the effectiveness of various efforts could be greatly improved. This project is working to strengthen the capacity of participating countries to integrate sustainable water resource management into their national planning processes and to comply with relevant national, regional, and

international agreements and conventions regarding international waters. The project builds on knowledge and institutional relationships established through GEF-funded international waters projects to date. It will enable governments, international agencies, non-governmental organizations, and other stakeholders to share critical knowledge and collaborate more effectively across boundaries via the Internet and face-to-face meetings, and to attend training courses tailored to countries' strategic needs.

Key project benefits include 1) improving the water quality of shared, international water bodies and 2) increasing the capacity of and communication among international waters stakeholders. (Implemented by the United Nations Development Programme, the United Nations Environment Programme, and the World Bank.)

## GLOBAL

# World Water Vision: Water and Nature

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**Focal Area:** International Waters

**Project Dates:** 1999–2000

**GEF Grant Financing:** \$700,000

**Co-Financing:** \$13.15 million

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This project was designed to find long-term solutions to factors that contribute to problems of water misuse. The objectives of the Vision process were to 1) raise awareness of issues among the general population and decisionmakers to foster political will and leadership, 2) develop a vision of water management in the year 2025 that is shared by water sector specialists and civil society, and 3) provide input to the Global Water Partnership investment strategy.

Three background papers—on freshwater ecosystems management and social security, freshwater ecosystems management and economic security, and freshwater ecosystems management and environmental security—were prepared, reviewed, and discussed in three thematic workshops in 1999 with a total of nearly 100 participants from various countries. A final publication, *Vision for Water and Nature*, was distributed at the 2000 World Water Forum. (Implemented by the World Bank.)

## GLOBAL

# GEF Country Workshops

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**Focal Area:** Multiple Focal Areas

**Project Dates:** 1998

**GEF Grant Financing:** \$3.51 million

**Co-Financing:** \$1.11 million

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This project seeks to build country capacity and awareness by means of direct and indirect communication through targeted participatory workshops. Key project goals are to 1) provide assistance for country-level coordination and 2) develop and implement a strategy for greater outreach and communication, in response to policy recommendations endorsed by the Council and a study of GEF's overall performance.

The project builds on experience gained from more than 40 GEF-funded workshops organized by the implementing agencies during the three years prior. With a broad-based national audience as their focus, the workshops highlight GEF's mission, strategy, policies and procedures; promote

country-level coordination and sharing of information; promote practical information on how to access GEF resources and how to propose, prepare, and implement GEF-financed activities; and disseminate information on best practices and lessons learned. GEF and the implementing agencies jointly organize and deliver the workshops following approval by the interagency workshop steering committee.

Key project benefits include 1) achieving greater awareness of and information about GEF; 2) improving country-level coordination; and 3) fostering a greater degree of country initiative and ownership of GEF projects. (Implemented by the United Nations Development Programme, the United Nations Environment Programme, and the World Bank.)

## GLOBAL Small- and Medium-Scale Enterprise Program

**Focal Area:** Multiple Focal Areas  
**Co-Financing:** \$51.20 million

**Project Dates:** 1994–2006

**GEF Grant Financing:** \$20.80 million

This project addresses the lack of capital for private, small and medium-size enterprises working to address global environmental issues. The key project goal is to make GEF grant funds available to intermediary institutions to finance small and medium-size projects addressing biodiversity and climate change issues.

Private sector investment could go far in helping solve pressing environmental problems of threatened biodiversity and greenhouse gas emissions. However, these types of projects traditionally have difficulty attracting the attention of utilities, investors, financial institutions, private equity funds, and governments. This project seeks to engage and leverage private sector participation in global environmental issues through such efforts as the Small- and Medium-Scale Enterprise (SME) program. Developed as a GEF pilot project

in 1995 and replenished in 1997, the SME program lends GEF grant funds to carefully screened intermediary institutions with financial and environmental expertise and experience working with SMEs. The intermediaries lend GEF funds to qualifying SMEs for promising, relatively high-risk experimental projects in biodiversity conservation and greenhouse gas reduction, for which long-term capital is lacking. In the project's pilot phase, six intermediaries were selected. They are committed to making debt and equity investments in 20–25 SMEs.

Key project benefits include 1) encouraging commercially viable activities that preserve biodiversity or use it sustainably and 2) reducing or absorbing greenhouse gases. (Implemented by the World Bank/IFC.)

## GLOBAL Small Grants Program

**Focal Area:** Multiple Focal Areas  
**Co-Financing:** \$3.50 million

**Project Dates:** 1992–1998

**GEF Grant Financing:** \$38.94 million

This project aimed to supplement funds needed to support small grassroots action groups addressing global environmental problems. The primary goal was to implement a small grants program for community-based efforts on global environmental problems.

Their small size, administrative flexibility, and relative freedom from political constraints allows local NGOs to pursue innovative solutions to the complex problems typical of GEF focal areas. This project complemented and contributed to the larger GEF work program by supporting community-based activities addressing local aspects of global environmental challenges. In a decentralized approach, each participating country had a national coordinator and national selection committee that received administrative support from that nation's UNDP country office. Most national coordina-

tors were based within local NGOs and were knowledgeable about local issues. They served as focal points for interacting with community groups and assisted with prescreening and developing project proposals. Members of national selection committees were drawn from in-country NGOs, universities, governments, and UNDP to review and select community-oriented projects for grants, fostering a high degree of local ownership in the grants program.

Key project benefits included 1) promoting conservation of biodiversity, reducing the likelihood of climate change, and protecting international waters; 2) encouraging locally appropriate solutions developed and supported by local people, and 3) demonstrating that global environmental protection and local development can go hand in hand. (Implemented by the United Nations Development Programme.)

## GLOBAL Small Grants Program, Phase II

**Focal Area:** Multiple Focal Areas  
**Co-Financing:** \$54.44 million

**Project Dates:** 1998–2000

**GEF Grant Financing:** \$54.00 million

This project, the second operational phase of the highly regarded GEF Small Grants Program (SGP), builds on previous efforts, paying special attention to the findings and recommendations of the second independent program evaluation. Key project goals are to 1) ensure funds replenishment to continue programs that address global environmental problems, 2) communicate lessons learned from community-based experiences, 3) increase public awareness about global environmental issues.

The SGP—currently active in 46 countries—uses a decentralized and demand-driven structure to provide overall guidance to country programs to ensure coherence with GEF policies, criteria, and objectives. This project establishes several benchmarks and stipulates submission of annual interim reports. Further fund replenishments depend on programs' meeting key milestones and deliverables. This approach strengthens the SGP's ability to meet the challenge of

achieving global environmental benefits through local action.

Key project benefits include 1) revising and implementing the strategic framework and operational guidelines at global and country levels to ensure congruence with the GEF operational strategy and programs; 2) select and implement community projects according to revised guidelines; 3) establish functional links with medium- and full-size GEF projects, other UNDP programs, government agencies, and national environmental funds; 4) establish a sound program to build the capacity of key stakeholders; 5) elaborate and implement global and country strategies for sharing program experiences and benefits; 6) establish resource mobilization strategies to ensure project and program sustainability; and 7) operate a monitoring and evaluation system to track and assess global benefits. (Implemented by the United Nations Development Programme.)

## GLOBAL Technology Transfer Networks, Phase 1

**Focal Area:** Multiple Focal Areas  
**Co-Financing:** \$1.28 million

**Project Dates:**

**GEF Grant Financing:** \$1.28 million

This project responds to the technology transfer needs identified by the different Multilateral Environmental Agreements (MEA). It aims to link up key public and private sector stakeholder groups that influence technology transfer, with a view toward fostering increased market uptake of sustainable environmental protection alternatives. Key project goals are to 1) identify areas ripe for environmental "synergy" and 2) implement integrated "win/win" solutions by encouraging a thorough assessment of all available options.

Project activities and outputs will enable fully informed investment, management, and policy decisions.

Key project benefits include 1) establishing a sustainable alternatives network to serve as an information management, communication, and transaction system to allow

structured learning, interactive comparison, and exchange of technologies, services, best practices, lessons learned, etc., by multiple stakeholders; 2) establishing a complementary decision support facility offering hands-on, short term counsel, coaching, and incentives for advanced market assessments and feasibility studies to encourage in-depth exploration of sustainable alternatives prior to critical decision-making; and 3) fostering strategic dialogues and alliances among key stakeholder groups across traditional sector and administrative boundaries to enable identification of common goals and facilitate technology market development coalitions. (Implemented by the United Nations Environment Programme.)

**GLOBAL\***  
**Biodiversity Country Studies**

**Focal Area:** Biodiversity  
**Co-Financing:** \$320,000

**Project Dates:** 1992-1994

**GEF Grant Financing:** \$7.00 million

This project, which was conducted in two phases, aimed to ensure the protection and conservation of the broadest possible range of global biodiversity and its rational use. Its main goal was to support selected developing countries in preparing country studies on biodiversity.

Each country established a national biodiversity unit to prepare the study; developed methodologies for the study; prepared an overview of biodiversity status and identified gaps in knowledge; identified sites, species, and genomes and measures for their conservation; estimated the costs and benefits of implementing these measures; determined projected unmet financial needs; and prepared a draft biodi-

\*Bahamas, Burkina Faso, China, Colombia, Congo DR, Cuba, Egypt, Estonia, Georgia, Ghana, Guinea, Jordan, Lebanon, Madagascar, Malaysia, Morocco, Mozambique, Namibia, Nigeria, Papua New Guinea, Peru, Philippines, Syria, Tanzania, Tunisia

versity strategy for presentation to UNEP.

UNEP negotiated agreements with participating countries, institutions, and individuals; prepared the work program; organized, convened, and followed up on meetings; provided baseline information and data on biodiversity available from the World Conservation Monitoring Centre to participating countries; and monitored, supported, and advised on preparation and implementation of country studies.

The project benefits include 1) contributing to conservation of biological diversity in a range of countries worldwide, 2) increasing information on the status of biodiversity in each country, and 3) strengthening institutions in assessing the status of biodiversity and defining priority areas for conservation. (Implemented by the United Nations Environment Programme.)

**GLOBAL\***  
**Biodiversity Data Management Capacitation in Developing Countries and Networking Biodiversity Information**

**Focal Area:** Biodiversity  
**Co-Financing:** \$1.39 million

**Project Dates:** 1994

**GEF Grant Financing:** \$4.00 million

The goal of this project was to prepare national plans on managing and applying biodiversity data, develop guidelines supporting efficient information management, and provide a "toolbox" of technologies to better manage biodiversity data.

This project worked with the World Conservation Monitoring Centre and relevant national institutions to enhance the capacity of 11 developing countries in data and biodiversity information management. In the process, the project strengthened North-South and South-South cooperation for disseminating, applying, and developing technologies and know-how. The project took a flexible approach to meet differing needs and priorities, responding to individual country requests for assistance in building national data management capabilities.

\*Bahamas, Chile, China, Costa Rica, Egypt, Ghana, Kenya, Papua New Guinea, Poland, Thailand.

The project developed or organized the following in each country: a national survey of institutions to report on existing national capacity for biodiversity data management, a national plan to manage and apply biodiversity data, a series of basic guidelines to support efficient information management, and a resource inventory of available methods and technologies to draw on for data management.

Project benefits included 1) facilitating conservation of biodiversity in each country, 2) building capabilities for data management in each country, 3) increasing available information and reducing duplication of activities on conserving and using biodiversity sustainably in each country, and 4) strengthening cooperation between developing and developed countries and among developing countries. (Implemented by the United Nations Environment Programme.)

## GLOBAL\*

# Development of Best Practices and Dissemination of Lessons Learned for Dealing with the Global Problem of Alien Species That Threaten Biological Diversity

**Focal Area:** Biodiversity  
**Co-Financing:** \$3.23 million

**Project Dates:** 1998–2001

**GEF Grant Financing:** \$750,000

This project aimed to mitigate threats to native biodiversity in many parts of world by alien invasive species. Specific project goals were to 1) identify existing efforts to recognize, evaluate, and mitigate invasive species; and 2) disseminate information on the most successful practices to combat them.

The Scientific Committee on Problems of the Environment (SCOPE) developed this project to meet the request of the Conference of Parties to the Convention on Biological Diversity. Also contributing to the project proposal were a diverse array of scientific and policy experts and a number of governments that have suffered or are suffering from alien

invasive species, and expressed strong support for the project. The project sought to halt loss of biodiversity from harmful alien species by developing best practices and disseminating lessons learned worldwide. To reach this goal the project first determined the current knowledge base on efforts to recognize, evaluate, and mitigate invasive species and their impacts. Best practice information was then disseminated by means of a Web page, public awareness materials, and technical and scientific reports. Expected project results include a globally accessible early warning system on alien invasive species.

Key project benefits include protecting biodiversity by encouraging action to prevent and control alien invasive species. (Implemented by the United Nations Environment Programme.)

\*Cote d'Ivoire, Czech Republic, Kenya, Malawi, Mauritius, New Zealand, Poland, South Africa.

## GLOBAL\*

# People, Land Management, and Environmental Change

**Focal Area:** Biodiversity  
**Co-Financing:** \$4.82 million

**Project Dates:** 1997–2001

**GEF Grant Financing:** \$6.28 million

This project responded to demands by government and local groups for models of biodiversity conservation within agricultural systems. Its goals were to 1) establish historical and baseline information on agrobiodiversity in eight countries, 2) develop participatory and sustainable models of biodiversity management, and 3) recommend policies for and approaches to sustainable agrobiodiversity management.

The project collaborated with farmers and local communities to identify appropriate conservation approaches that are socially and financially sustainable. By integrating locally developed knowledge of soil, climate, and other physical factors with scientific assessments of their quality in relation to crop production, a set of sustainable agricultural technologies were devised to maintain crop and management diver-

sity. Project activities included establishing demonstration sites and data gathering by villagers and scientists using on-farm trials and social methods; conducting participatory rural appraisal and land use planning exercises with farmers, outreach and awareness on in-situ biodiversity conservation, and collaborative field trials between farmers and scientists; and integrating scientific and community social information and undertaking multidisciplinary analysis of findings at village, national, and cross-country workshops.

The project's benefits included 1) contributing to the protection of plant biodiversity worldwide, 2) increasing knowledge on agrobiodiversity and methods to increase ecosystems worldwide, 3) building capacity of country institutions for participatory management of agrobiodiversity and policies, and 4) contributing to the security of world food supplies. (Implemented by the United Nations Environment Programme.)

\*Brazil, China, Ghana, Guinea, Kenya, Papua New Guinea, Tanzania, Uganda.

**GLOBAL\***  
**Pilot Biosafety Enabling Activity**

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:**

**GEF Grant Financing:** \$2.74 million

The overall goals of this project are 1) strengthen national capacity in order to implement biosafety procedures and maximize the potential of biotechnology; 2) apply biosafety procedures to enhance environmental management; 3) investigate modalities for applying the UNEP International Technical Guidelines for Safety in Biotechnology and other guidelines under the Convention on Biological Diversity; 4) harmonize regional and international legal instruments to simplify the process of applying and conforming to regulations; 5) raise public awareness of the issues involved in release of living modified organisms and their products to promote informed debate; 6) carry out an assessment of technological

capacity, its effect on implementation of national biosafety frameworks, and means to improve it; 7) increase the overall safety of biotechnology so that citizens may reap the benefits with minimum adverse effects on health and the environment.

The project comprises two main elements, a national component and a global component. The national component entails the preparation of national biosafety frameworks by 18 countries of various sizes, geographical locations, and levels of socioeconomic development, as well as different stages of biotechnology development and application of biotechnology products. The global component involves the convening of eight regional workshops with the primary aim of providing a better understanding and appreciation of biosafety issues pertinent to implementation of the UNEP guidelines. (Implemented by the United Nations Environment Program.)

\*Bolivia, Bulgaria, Cameroon, China, Cuba, Egypt, Kenya, Hungary, Malawi, Mauritania, Mauritius, Namibia, Pakistan, Poland, Russian Federation, Tunisia, Uganda, Zambia.

**GLOBAL\***  
**Promoting Best Practices for Conservation and Sustainable Use of Biodiversity of Global Significance in Arid and Semi-Arid Zones**

**Focal Area:** Biodiversity  
**Co-Financing:** None

**Project Dates:** 1999

**GEF Grant Financing:** \$750,000

This project aims to improve knowledge of the rich biodiversity found in the world's dryland regions and to promote strategies to better manage these resources. The project draws on the principles of local participation and involvement as key to its efforts.

The project has three major goals: 1) to identify and disseminate best practices for the conservation and sustainable use of biodiversity resources in arid and semi-arid ecosystems; 2) to increase South-South collaboration among centers of excellence, focusing on the management of biodiversity in dryland regions; and 3) to assist the efforts of local populations to oversee and sustainably utilize these fragile ecosystems.

To fulfill these goals, the project design calls for the organization of four regional workshops and one international conference to explore in-depth the complex environmental, economic, and political issues that surround efforts to conserve and sustainably use the biodiversity of dryland regions; the creation of a website to allow participants and others to exchange information on issues of common concern; the publication of a monograph that describes in detail the successful experiences in resource management with which each of the participants has been involved; and, ultimately, the creation of an institutional network focused on this issue that will continue to function long after the project itself concludes. (Implemented by the United Nations Environment Programme.)

\*Brazil, Burkina Faso, Egypt, Jamaica, Jordan, Kuwait, Mali, Mexico, Mongolia, Morocco, Nigeria, Pakistan, Senegal, Syria, Tunisia.

## Country Case Studies on Climate Change Impacts and Adaptations Assessment, Phase I

Focal Area: Climate Change

Project Dates: 1996–1998

GEF Grant Financing: \$2.00 million

Co-Financing: None

Measures by nations to reduce their vulnerability and adapt to climate change should be an integral part of any sustainable development strategy. This project addressed the lack of reliable methods needed by nations to assess the impacts of climate change and develop appropriate responses. Key project goals were to develop methodologies to help nations assess potential climate change impacts and evaluate adaptation strategies.

Adaptation strategies should meet present-day development needs by reducing the vulnerability of certain areas and economic sectors to climatic variability and extreme climatic events. Through a set of country case studies, this GEF-financed project tested and improved methodologies

and guidelines for assessing climate change impacts and adaptations under field conditions. The countries studied included Antigua and Barbuda, Cameroon, Estonia, and Pakistan. As part of this project, local institutions and experts received training, thereby strengthening institutions and enhancing capacity to address issues related to climate change in their countries. The project contributed to long-term investment planning efforts, such as those related to irrigation and hydropower schemes, coastal protection, and agriculture and forestry practices.

Project benefits include 1) better understanding of the vulnerability of countries, regions, and sectors to climate change; 2) more accurate predictions of the impacts of climate change; and 3) generation of information for long-term planning. (Implemented by the United Nations Environment Programme.)

\*Antigua and Barbuda, Cameroon, Estonia, Pakistan.

## Economics of GHG Limitation, Phase I

Focal Area: Climate Change

Project Dates: 1996–1998

GEF Grant Financing: \$3.00 million

Co-Financing: UNEP Collaborating Centre on Energy and Environment, \$270,000

This project sought to establish a consistent, widely recognized approach to assessing the economic costs of mitigating global warming. Project goals were to 1) establish and refine an internationally acceptable methodological framework for the economics of climate change mitigation, and 2) contribute to cost-effective global strategies for reducing emissions.

The international community has recognized that greenhouse gases must be reduced worldwide to address the threat of rapid and serious climate change. The UNFCCC has also established the need for a concerted and coordinated international effort. This GEF-financed project provided countries from all four developing regions—Africa, Asia, Latin

America, and Eastern Europe—along with Southern Africa Development and Andean Pact countries and the international community, with economic analyses of climate change mitigation strategies. It identified specific investment options by establishing and refining a consistent methodological framework for assessing mitigation approaches within and across sectors. The project builds on an earlier UNEP project, which attempted to clarify various approaches to economic assessment and to model ways to limit greenhouse gas emissions through practical applications in specific countries.

Key project benefits include 1) facilitating a national assessment of climate change mitigation options and reporting as required under the UNFCCC, and 2) establishing national capacities to continue mitigation and other climate change activities. (Implemented by the United Nations Environment Programme.)

\*Argentina, Ecuador, Estonia, Hungary, Indonesia, Mauritius, Senegal, Vietnam, SADC and Andean Pact Countries.

**GLOBAL\***  
**Photovoltaic Market Transformation Initiative**

**Focal Area:** Climate Change  
**Co-Financing:** \$90.00 million

**Project Dates:** 1996–2010

**GEF Grant Financing:** \$30.00 million

Rapid economic and population growth will increase greenhouse gas emissions worldwide, particularly as 300 to 400 million households now without electricity increase their use, and governments continue to invest in fossil fuel generation plants. This project addresses the need for governments to switch from conventional power options to lower carbon-emitting alternatives to meet future demand. The primary project goal is to support private sector investments to encourage use of photovoltaic technology, especially for rural electrification in India, Kenya, and Morocco.

This project seeks to demonstrate large-scale use of photovoltaics as one of the best long-term strategies for reducing greenhouse gas emissions in developing countries.

The project is expected to catalyze competition and stimulate joint ventures at the country or international levels, pioneer a variety of financing mechanisms, and promote public-private partnerships.

Key project benefits include 1) reducing greenhouse gas emissions, 2) mobilizing up to \$80 million in private co-financing for photovoltaic technology, 3) increasing total photovoltaic markets in these countries by about 30 percent in the next five years, 4) demonstrating business opportunities and alternatives to fossil-fueled grid extension, 5) expanding use of photovoltaics to a wider range of activities, and 6) helping reduce manufacturing costs. (Implemented by the World Bank/IFC.)

\*India, Kenya, Morocco.

**GLOBAL\***  
**Solar and Wind Energy Resource Assessment**

**Focal Area:** Climate Change  
**Co-Financing:** Collaborating agencies, \$1.52 million; national agencies, \$993,000

**Project Dates:** 2000–2004

**GEF Grant Financing:** \$6.81 million

This project's overall goal is to promote the integration of wind and solar alternatives in national and regional energy planning, sector restructuring, and policymaking. It is meant to enable private investors and public policymakers assess the technical, economic and environmental potential for large-scale investments in technologies that facilitate the exploitation of two increasingly important sources of renewable energy—wind and solar. It should generate informed decisionmaking and enhance the ability of participating governments to attract increased investor interest in renewable energy. The project will demonstrate the use of technology in investment and policy decisionmaking, and build local capacities for the continuous use of scientific instruments.

Project activities include developing tools for project analysis and use of resource information, initiating a global archive and review mechanism, generating regional/national solar and wind maps, and performing national assessment demonstrations.

The project's benefits include 1) significant GHG emissions reductions through improved engineering and targeted investments in solar and wind energy projects; 2) incremental cost and energy savings; 3) diversified energy supply, lower local pollution, and reduced energy imports; and 4) more robust energy plans and identification of opportunities for local reduction of global environmental pollution. (Implemented by the United Nations Environment Programme.)

\*Bangladesh, Brazil, China, Cuba, El Salvador, Ethiopia, Ghana, Guatemala, Honduras, Kenya, Nepal, Nicaragua, Sri Lanka.

**GLOBAL\***

**Reduction of Environmental Impact from Tropical Shrimp Trawling through Introduction of By-catch Technologies and Change of Management**

**Focal Area:** International Waters  
**Co-Financing:** \$4.44 million

**Project Dates:** 2000–2004

**GEF Grant Financing:** \$4.78 million

This project addresses two important policy issues: food security and the biological impact of trawling on the environment. It is expected to introduce fishing technologies and practices that reduce the capture of juveniles in selected countries. Thereafter, it is hoped that other shrimp-fishing countries suffering by-catch problems would adopt the technologies in seeking solutions to similar problems. In addition to the increased fish production and conservation of biodiversity as a result of project intervention, shrimp trawling will earn an improved reputation and continue to produce needed export income.

The project is inventorying by-catch reduction devices, as well as assessing the legal and policy framework; identifying by-catch problems; mapping the distribution of target

species catches and by-catch; developing and adopting by-catch reduction technologies; testing by-catch reduction devices in industrial and artisanal fisheries; testing alternative fishing gears for shrimp fishing; conducting demonstrations and training for fishers on by-catch reduction devices; and disseminating results to the fishing industry.

The project's benefits include 1) enactment of relevant legislation and development of an improved management framework, 2) minimization of the pan-tropical problem of unwanted by-catch from shrimp trawling, 3) adoption of by-catch reduction devices by shrimp-trawling fisheries and improved management of shrimp-trawling fishery, 4) increased cooperation among countries in research on and management of the resources, and 5) better understanding of the interactions between fishing gear and environment. (Implemented by the United Nations Environment Programme/FAO.)

\*Cameroon, Colombia, Costa Rica, Cuba, Indonesia, Iran, Mexico, Nigeria, Philippines, Trinidad and Tobago, Venezuela.

**GLOBAL\***

**Harnessing Multi-Stakeholder Mechanisms to Promote Global Environmental Priorities**

**Focal Area:** Multiple Focal Areas  
**Co-Financing:** None

**Project Dates:** 1999

**GEF Grant Financing:** \$750,000

The objective of this project is to engage more actively an existing structure in six prototype countries to fulfill the objective of including global environmental priorities while they implement their mandate of integrating environmental

issues and social and cultural concerns in development planning. (Implemented by the United Nations Development Programme.)

\*Burkina Faso, Costa Rica, Dominican Republic, Mexico, Uganda, Philippines.



# Why and How GEF Works

In the past decade, GEF continuously sought to evolve as a flexible, innovative entity that could respond effectively to new challenges and responsibilities. GEF has applied the lessons learned from its activities with the result that it remains on the cutting edge of international global environmental problem solving. Several characteristics contribute to GEF's effectiveness:

**Stakeholder participation at all levels.** From the topmost level of its decision-making structure to projects on the ground, GEF encourages the participation of a broad range of stakeholders. Overall, GEF and its partners represent a comprehensive network of governments, scientists, NGOs, civil society, the private sector, and grassroots groups, working at different levels toward sustainable development that addresses global environmental challenges. GEF's Council, which functions as a sort of independent board of directors responsible for adopting and evaluating GEF programs, welcomes the participation of NGOs in its deliberations and incorporates the input of the global scientific community through its Scientific and Technical Advisory Panel (STAP). A range of stakeholders implement GEF-financed projects, which also often actively involve national governments, civil society, the private sector, local stakeholders, and other appropriate parties.

**Country-driven projects.** "Country drivenness" means that initial project ideas originate in the country, based on national strategies reflecting national and regional priorities; it is essential to ensuring the sustainability of GEF projects. Consultation between GEF's implementing and executing agencies and national and regional participants is an important element of the country-driven GEF project development process. In addition,

GEF projects are an integrated part of a country's development process.

**Strong national coordination.** Fully functional coordination among all stakeholders is necessary for GEF projects to promote sustainable development that successfully addresses global environmental concerns. Countries choose an operational focal point to maintain a close working relationship among specialized and technical ministries and with NGOs, the private sector, scientists, and local governments and other interested partners in civil society (see annex A for a list of current focal points in the region). National focal points are responsible for coordinating identification and preparation of GEF programs and projects. For international waters projects, establishment of national interministerial committees for participation in the project has been recommended by GEF and has proved of great value in addressing transboundary waters issues.

## For More Information

For more information on GEF activities in the Asia Region and GEF procedures and requirements for projects in the developing world, please contact:

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