ADB

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Progress and Prospects

Asian Development Bank

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6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
Tel: +63 2 632 4444
Fax: + 63 2 636 2444
www.adb.org

For orders, please contact:
Department of External Relations
Fax: +63 2 636 2648
E-mail: adbpub@adb.org

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Foreword

Environment Program: Progress and Prospects is a snapshot of the Asian Development Bank's (ADB's) strategies and programs, loans and technical assistance projects with environmental sustainability as a theme. It also highlights partnerships and actions that ADB is supporting to promote environmentally sustainable economic growth in Asia and the Pacific. It informs our stakeholders of ADB's support for its developing member countries (DMCs) during 2003–2008, and its future actions to address the environmental challenges affecting our region.

ADB's *Environment Policy (2002)*, and recently its long-term strategic framework for 2008–2020, Strategy 2020, emphasize the importance of environmentally sustainable growth in its mission to help its DMCs reduce poverty and improve living conditions and quality of life. ADB's earlier emphasis on building environmental safeguard capacity of its DMCs has been broadened, and now includes support for improved policies, strengthened institutions and projects with environmental sustainability as a theme.

Support for ADB projects with environmental sustainability as a theme has shown a marked upward trend in recent years. The proportion of ADB-financed projects supporting environmental sustainability during 2006–2008 reached 24%. This is a significant increase from the 1996–1998 rolling average of 14%. Worth noting is also the fact that the 2008 environmental lending was ADB's highest by far, as 26 projects with environmental sustainability as a theme were approved for $2.6 billion, representing 30% in number and 25% in loan value.

Considerable progress was also achieved on other fronts. Putting into operation its clean energy initiatives, ADB surpassed in 2008 the $1 billion annual lending target set in 2005. Transport and urban investments began to shift to low-carbon alternatives. Financing schemes that mobilized concessional funds, catalyzed private sector capital, and maximized the use of market mechanisms (such as carbon financing) to support energy efficiency improvement, and use clean energy and renewable energy sources were established. In its climate change adaptation program, ADB also made headway, as assistance was extended to countries to design climate change risk-reduction projects and implement adaptation interventions. Climate change implementation plans prepared by regional departments paved the way for incorporating mitigation and adaptation interventions into country partnership strategies and subregional programs.

ADB continued to provide complementary support towards environment sustainability through policy dialogue, institutional reform, capacity development, and knowledge generation and transfer. Close working relationships also continued with our development partners, who play a vital role in our development efforts, as they complement our core competencies and allow for stronger responses to our DMCs' needs. To improve the relevance and strengthen the effectiveness of its environmental and social safeguard policies, ADB has updated these policies. ADB's Board of Directors approved the Safeguard Policy Statement on 20 July 2009.

A look at our 2009 lending pipeline indicates that our 2008 environmental lending volume is likely to be surpassed. This is an indicator that our DMCs' investments in the energy, water supply, sanitation and waste management, and agriculture and natural resource sectors have indeed been making quantitative and qualitative shifts towards improved environmental outcomes. With Strategy 2020 in place, supported by various programs, such as the Climate Change Program, the Poverty and Environment Program, the Clean Air Initiative for Asian Cities, the Cities Development Initiative for Asia, the Sustainable Transport Initiative, the Water Financing Program, and subregional programs, such as the Central Asian Countries Initiative for Land Management, the Greater Mekong Subregion Core Environment Program, and the Coral Triangle Initiative, ADB is effectively contributing to environmentally sustainable growth in Asia and the Pacific.

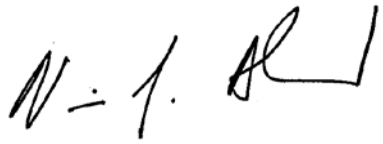
Looking ahead, to deal with the environmental challenges affecting Asia and the Pacific, we will undertake the following actions: We will enhance the mainstreaming of environmental considerations—including climate change—into our country partnership strategies, subregional economic cooperation programs, sector strategies, programs, and projects. We will continue to promote investments in sound environmental and natural resource management while promoting low-carbon growth and adaptation to climate change impacts. We will continue to help our DMCs mainstream environmental considerations into their policies, plans, and programs, and help strengthen their legal and institutional frameworks.

In addition, we will enhance the capacities of environmental agencies and cells of key executing agencies. Recognizing the enduring results of sustained policy dialogues, we will actively engage with our borrowers to strengthen their policies and institutions. Support for regional cooperation on shared environmental public goods will continue, as will knowledge transfer on environmental management and new sustainable technologies. ADB's Safeguard Policy Statement will enhance the development impact of its projects, as well as strengthen DMCs' own safeguard systems and capacity to manage environmental risks of development projects.

There are many challenges ahead. The region is changing, and ADB will respond to remain relevant and effective. During this time of financial and economic crisis, while we help stimulate the economies in Asia and the Pacific with our financial resources, we will also extend policy and technical advice as we encourage our DMCs to make use of this opportunity to strengthen their policies and institutions, build their capacities, and thus more rapidly move towards sustainable development. ADB will be vigilant and remain responsive to our DMCs' new needs and demands. It will continue to be a stimulus for environmental change and remain a strong partner to its DMCs in their pursuit of environmentally sustainable growth.

This report was prepared at the request of the Environment Community of Practice to give an overview of ADB's actions to assist its DMCs achieve environmentally sustainable growth. The report was prepared by staff from the Environment and Safeguards Division (RSES) of the Regional and Sustainable Development Department led by Helen B. Cruda, RSES. Overall guidance and support were received from the Environment Community of Practice. Daniele Ponzi, Yue-Lang Feng, and Javed Mir gave useful suggestions. Marie Antoinette Virtucio and Christopher Tabungar compiled and synthesized information and prepared parts of the report, while Ma. Charina Munda provided research assistance.

We hope that the information presented in this report will increase awareness among our stakeholders regarding the measures ADB is taking to help address the environmental challenges faced by our region, and underscore the need for combined and concerted efforts of all development partners to promote sustainable development in Asia and the Pacific.



Nessim J. Ahmad
Director, Environment and Safeguards Division concurrently Practice Leader (Environment)
Regional and Sustainable Development Department
Chairperson, Environment Community of Practice

Urooj S. Malik
Director, Agriculture, Environment and Natural Resources Division, Southeast Asia Department
Co-Chairperson, Environment Community of Practice

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Abbreviations

3R	–	reduce, reuse, and recycle
ADB	–	Asian Development Bank
AECEN	–	Asian Environmental Compliance and Enforcement Network
AQM	–	air quality management
ASEAN	–	Association of Southeast Asian Nations
BIMP-EAGA	–	Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area
CACILM	–	Central Asian Countries Initiative for Land Management
CAI-Asia	–	Clean Air Initiative for Asian Cities
CCIP	–	Climate Change Implementation Plan
CDIA	–	Cities Development Initiative for Asia
CDM	–	Clean Development Mechanism
CEA	–	country environmental analysis
CEFPF	–	Clean Energy Financing Partnership Facility
CEP	–	Core Environment Program
CMI	–	Carbon Market Initiative
CO_2	–	carbon dioxide
CPS	–	country partnership strategy
CSS	–	country safeguard system
CTI	–	Coral Triangle Initiative
DMC	–	developing member country
GEF	–	Global Environment Facility
GMS	–	Greater Mekong Subregion
IUCN	–	International Union for the Conservation of Nature (World Conservation Union)
Lao PDR	–	Lao People's Democratic Republic
MDG	–	Millennium Development Goal
NGO	–	nongovernment organization
OECD	–	Organisation for Economic Co-operation and Development
PEF	–	Poverty and Environment Fund
PRC	–	People's Republic of China
SCAF	–	Seed Capital Assistance Facility
SO_2	–	sulfur dioxide
SPS	–	safeguard policy statement
UNCCD	–	United Nations Convention to Combat Desertification
UNDP	–	United Nations Development Programme
UNEP	–	United Nations Environment Programme
UNESCAP	–	United Nations Economic and Social Commission for Asia and the Pacific
USAID	–	United States Agency for International Development
USEPA	–	United States Environmental Protection Agency
WHO	–	World Health Organization
WSSWM	–	water supply, sanitation, and waste management
WWF	–	World Wide Fund for Nature

Chapter 1
Introduction

Asia's robust economic growth in the past decades has lifted millions out of poverty. From an estimated 1.4 billion people living in extreme poverty in 1990 the number had gone down to about 903.4 million by 2005.[1] Still, rapid economic growth and pervasive poverty have continuously degraded the region's natural resources. The quality of the environment has deteriorated, and climate change has had an impact, threatening the productivity and integrity of natural systems as well as people's health, safety, and livelihoods.

Aside from rapid population growth, urbanization, industrialization, and intensified agriculture are driving the demands for water, energy, and raw materials at environmentally unsustainable rates. Unless environmentally sustainable approaches to economic growth are devised and implemented, the destruction of natural resources and environmental degradation, worsened by climate change, will jeopardize the region's economic and social gains and affect the people's quality of life, with poor people most severely affected.

This chapter presents the drivers of environmental change in the region and the associated environmental problems. Environmental enforcement and compliance in the region is briefly discussed. The Asian Development Bank's (ADB) corporate response and highlights of its environmental assistance are also presented.

Drivers of Environmental Change

Rapid urbanization. The expansion of Asia's urban populations and the accompanying congestion, poverty, and pollution are unrelenting. They present a major challenge for the planning and development capabilities of the region's public service delivery systems. It is estimated that there will be over 1.1 billion more urban residents in Asia in 2030 than there were in 2005. In the People's Republic of China (PRC) alone, the urban population is forecasted to reach 1.0 billion by 2030.[2] Such rapid urban growth has created unprecedented environmental problems of air and water pollution, solid waste, and toxic effluents.

These urban populations also make unsustainable demands on soil and water supplies for food production and on forests for timber and paper use. Cities occupy only 2% of the world's land but consume 75% of its resources, and produce a similar percentage of the world's waste. Cities are also major contributors to climate change

[1] This is based on the $1.25 per day criterion.

[2] *The Economist*. 2009. City of Dreams. (Estimates by McKinsey Global Institute). March 21–27 2009.

through electricity and fuel consumption for transport, industry, infrastructure construction, and domestic use, and are likely to contribute more than half of the rise in greenhouse gases over the next 20 years.

Waste management is a major challenge in urban areas. As urban populations swell and per capita income increases, so does the amount of solid waste generated. Asia is expected to increase its solid-waste generation fivefold by 2025. The management of increasing volumes of hazardous wastes presents additional challenges, especially in respect of transboundary movement. Many megacities continue to grapple with limited solid-waste facilities and poor solid-waste management practices.

Slums bring special social and environmental problems. Up to one-third of Asia's city dwellers live in overcrowded slums and squatter settlements. While not all slum dwellers are poor by the income definition of poverty, all are affected by the degrading physical conditions and higher environment-related health risks associated with such neighborhoods. Conditions can only worsen as city populations continue to swell and transport, communication, health, sanitation, and other urban infrastructure are stretched beyond capacity.

Increasing industrialization. Along with large-scale urbanization, industrialization has resulted in localized shortages of freshwater resources in some of the fast industrializing countries in Asia and the Pacific. In the PRC, for example, groundwater exploitation has lowered water tables by dozens of meters since the 1960s.[3] The ability of countries in the region to meet their own water needs, including supplying clean water for one-third of the entire population in Asia and the Pacific (based on 2000 estimates), may be further compromised by the impacts of climate change, which are already affecting local rainfall patterns.

Increasing industrialization also leads to the intensive use of resources in rapidly industrializing economies. In 2003, for example, the PRC economy used approximately half of the world's cement production, one-third of its steel, one-quarter of its copper, and one-fifth of its aluminum.[4] India's demand for raw materials may triple over the next decade as capital expenditure and infrastructure investments accelerate.[5] The resources needed to feed these economies are being acquired from within the region and around the planet, expanding Asia's environmental "footprint" on a global scale.

Air pollution from vehicles, power plants, incinerators, and industries is a major environmental problem in Asian cities. Outdated pollution control technology and the use of high polluting fuels compound this problem. Despite slight improvements in some cities over the last few years, Asia has the highest air pollution levels in the world, well above World Health Organization (WHO) guidelines. In fact, none of the cities in Asia meet the latest WHO guideline values for particulate matter or PM_{10} (particulate matter with a diameter of less than 10 microns). In some cities, PM_{10} is seven times higher than the 2005 WHO guideline values (20 micrograms per cubic meter), and on average PM_{10} is four times the guideline values. At present, Asia has the most number of polluted cities in the world, and health and environmental impacts in cities or countries are reported to result in economic damage to gross domestic product (GDP) of up to 7%. Around 500,000 Asians

[3] UNESCAP. 2006. *State of the Environment in Asia and the Pacific*. Bangkok, Thailand.

[4] PriceWaterhouseCoopers. 2004. *The China Challenge: Opportunity and Risk in the World's Fastest Growing Market*. New York: pwc.com.

[5] *The Economist*. 2006. More of Everything: Does the world have enough resources to meet the growing needs of the emerging economies? 16 September.

die prematurely each year from the combined effects of indoor and outdoor air pollution.[6] If nothing is done, particularly in the transport and energy sectors, air pollution levels will worsen in the absence of intensified air quality management. Air pollution in the form of acid rain can be transported hundreds of kilometers by wind before being deposited through rain, fog, or snow. The acidic deposition damages buildings, degrades the environment, and reduces crop yields. It has been reported that in India, wheat growing near a power plant suffered a 49% reduction in yield compared with wheat grown 22 kilometers (km) away.[7]

Water pollution is also a major concern in both urban and rural areas. As the demand for water grows with population and the economy, water supplies will be increasingly polluted from untreated sewage, industrial discharges, and saltwater intrusion into overexploited water tables. Inadequately treated industrial wastewater is frequently dumped in watercourses that are already stressed and polluted, due to the fact that around 2 billion people in the region have very little access to sanitation (about 77% of people worldwide, based on 2000 estimates). Water pollution is worst in Southeast Asia, followed by South Asia. Diarrhea from polluted water remains the number one cause of child health problems in Asia and the Pacific.[8]

Agriculture intensification. Aside from urbanization and industrialization, dramatic increases in agricultural production have also brought about a range of environmental pressures. Regional agricultural production increased by 62% from 1990 to 2002, compared with an increase in global agricultural production of only 27%.[9] Aquaculture in the region accounts for an estimated 91% of global aquaculture production, 70% of which comes from the PRC.

Dramatic increases in agricultural production have been achieved by the intensification of agro-chemical use. For example, in 2001, the region used twice as much mineral fertilizer per hectare (ha) of agricultural land as the rest of the world. On the other hand, some countries are now beginning to cut back on using large quantities of fertilizer. Farming practices that involve the heavy use of chemical fertilizers emit significant amounts of nitrous oxide, a powerful greenhouse gas with approximately 310 times the warming potential of carbon dioxide (CO_2).

Intense agricultural production has also increased water consumption. Farmers use about three-quarters of the world's water compared to the one-fifth used by industry and a mere one-tenth used domestically. In at least 31 countries of Asia and the Pacific, more than 60% of water is used for agriculture. Water use is influenced not only by the type of food grown but also by the type of produce. To grow a kilogram of wheat requires around 1,000 liters of water, but it takes as much as 15,000 liters of water to produce a kilogram of beef. So the shift from vegetarian diets to meat-based diets—which contributed to the food price rise of 2007–2008—also has big implications for water.[10] The shift to meat-based diets will be impossible to reverse since it is a product of rising wealth and urbanization. "Water intensity" in food increases fastest as people begin to climb out of poverty, because that is when they start to eat meat. Another driver of increased water use is the 2 billion of people projected to be added to the current population

6 ADB and CAI-Asia. 2006. *Urban Air Quality Management in Asia: Summary of Country/City Synthesis Reports (Discussion Draft)*. ADB Regional and Sustainable Development Department and Clean Air Initiative for Asian Cities. Manila.

7 *www.bernadi-key.blogspot.com/2009/02/6-major-environmental-problems-of-asia.html*

8 Bhutta, Z., et al. 2004. *Maternal and Child Health: Is South Asia Ready for Change?* BMJ 2004. 3 April.

9 UNESCAP. 2006. *State of the Environment in Asia and the Pacific*. Bangkok, Thailand.

10 *The Economist*. 2009. *Water: Sin Aqua Non*. April 11–17.

by 2025. This will require 1.5 trillion m^3 of water, which is equal to the volume of water for all uses in the world outside of Asia.[11]

Intensified agriculture coupled with poor farming practices and resource management have created problems. Waterlogging and salinization resulting from poor irrigation practices, and other problems due to overgrazing, deforestation, soil pollution, and other forms of land mismanagement, have made land degradation problems in Asia the most pressing in the world, after sub-Saharan Africa. The arid and mountainous lands from the Caspian Sea of Central Asia to the Yellow River Basin of the PRC, and continuing south through Pakistan and western India, represent a region that is prone to periodic droughts and ongoing desertification. The added risks from the impacts of climate change on these fragile areas are also of growing concern. Land degradation affects 1.3 billion ha of agriculturally productive drylands in Asia, or about 70% of the region's total dryland area. Asia also has the most people affected by land degradation. Where improperly managed, irrigation systems are linked not only to increased water demand and eutrophication of freshwater bodies, but also to land degradation and soil erosion. Mismanaged aquaculture has resulted in the loss of mangrove forests, land degradation, and water pollution. The region is also exposed to dust and sandstorms exacerbated by degraded land.

Climate change. Climate change associated with the global increase of greenhouse gas emissions from, among other things, urbanization, industrialization, and agricultural intensification, is also a driver of environmental change. Asia's share of greenhouse gas emissions worldwide is projected to reach 29% by 2030, up from 9% in 1973 and 24% in 2003. Such a marked difference between the current and projected global greenhouse gas emissions in Asia is due to the recent sustained period of fast economic growth in the region, driving an ever-increasing demand for energy. The International Energy Agency estimates that energy supply infrastructure in developing Asia will require $6.3 trillion in investments between now and 2030 to meet demand, with major energy-consuming countries showing a keen preference for coal-fired power generation. This trend towards coal-fired power generation will contribute significantly to the rise in greenhouse gas emissions in Asia.

Compounding this problem is deforestation, which accounts for 17% of global carbon emissions, and is the largest source of CO_2 in many developing countries. Vegetation and organic matter in soils absorb CO_2 from the atmosphere and play a critical role in maintaining the earth's CO_2 balance. Land use changes that disrupt forests and soils can greatly affect the earth's natural ability to store and release carbon. Deforestation alone accounts for more than three-quarters of Indonesia's greenhouse gas emissions. Fossil fuel consumption and deforestation are the reasons why the PRC, India, and Indonesia are now among the world's top 10 greenhouse gas emitting nations, although their per capita emissions remain relatively low.

In Asia, the adverse effects of climate change are profound. From the Himalayan highlands to the rich tropical forests of Southeast Asia and in the Pacific Islands, many natural ecosystems are vulnerable to climate change, and some will be irreversibly damaged. Some of these effects include more intense tropical cyclones, more severe droughts and floods, accelerated melting of glaciers and sea-level rise, higher frequency of forest fires, lower freshwater availability, threatened crop production and aquaculture, higher incidence of heat-related and infectious diseases, and greater risk of loss of life and property. Climate change has pushed governments to subsidize

[11] *The Economist*. 2009. Awash in waste (water rights). April 11–17.

biofuels, which could prove as big a disaster for water as they already have been for food. Many living conditions are also sensitive to climate change, and some will be more severely affected, particularly the poorest people within the large populations of South Asia.

The Organisation for Economic Co-operation and Development (OECD) reports that eight of the 10 coastal cities at the greatest long-term risk of rising sea levels due to climate change are in Asia. Bangladesh could lose 17% of its land area to rising seas, while several island nations such as the Maldives and Tuvalu could become uninhabitable or disappear. Current global warming forecasts suggest that crop yields in India could decline by as much as 30% by 2050. Under such scenarios, there is a pressing need for vulnerable countries and regions to devise and implement adaptive measures to the effects of climate change and enhance their resilience to adverse impacts.

Weak environmental enforcement and compliance. While environmental policies, laws, and institutions have been strengthened in some countries, effective enforcement and compliance continue to pose challenges. These challenges are brought about by weak political will, low levels of institutional capacity, and inadequate budget allocations. The unclear roles and mandates of government agencies, the lack of transparency, and lack of active civil society involvement also contribute to the problem. Challenges remain in how environmental governance can be made more effective and how environmental policies and institutions can be strengthened, as these are expected to largely determine the region's prospects for environmentally sustainable development in the coming decades.

ADB's Response

ADB is committed to helping its developing member countries (DMCs) promote environmentally sustainable growth in Asia and the Pacific and improve the quality of life and living conditions of the people. ADB's environmental operations are guided by its 1999 *Poverty Reduction Strategy*[12] (enhanced in 2004) and its *Environment Policy* (2002)[13], which emphasizes five thrusts: to promote environmental interventions to reduce poverty, to mainstream the environment in economic growth, to maintain global and regional life-support systems for sustainable development, to build partnerships to maximize impacts, and to integrate environmental safeguards across all ADB operations. Recently, however, rapid economic growth in the region and significant shifts in the development, aid, and financial landscape have generated a need—and an opportunity—for ADB to set a new strategic course. Thus, in 2008, ADB adopted a new long-term strategic framework for 2008–2020, Strategy 2020.[14] Under this framework, ADB's corporate vision will continue to be "an Asia and Pacific Free of Poverty," and its mission will be to help its DMCs reduce poverty and improve living conditions and quality of life. ADB will pursue its vision and mission by focusing on three complementary strategic agendas: inclusive growth, environmentally sustainable growth, and regional integration.

Strategy 2020 reaffirms the importance of environmentally sustainable growth in ADB's mission. This is crucial, because robust economic growth in the region is depleting its natural resources, hastening environmental degradation both in urban and rural areas, and impacting climate change. Only growth that

12 ADB. 1999. *Fighting Poverty in Asia and the Pacific: The Poverty Reduction Strategy.* Manila.
13 ADB. 2002. *Environment Policy of the Asian Development Bank*. Manila.
14 ADB. 2008. Strategy 2020: *The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020.* Manila.

is environmentally sustainable can eliminate poverty, since many poor people depend on natural resources for their livelihoods.

To realize environmentally sustainable growth under Strategy 2020, ADB will continue to promote and invest in sound environmental and natural resources management, help move economies onto low-carbon growth paths, reduce the carbon footprint of Asia's cities, and adapt to the unavoidable impacts of climate change. It will also support the use of environmentally friendly technologies, adopt environmental safeguard measures, and establish institutional capacities to strengthen enforcement. Through regional cooperation, ADB will continue to promote effective approaches and solutions and facilitate the transfer of knowledge and technologies on environmental management. In addition, ADB will further strengthen regional initiatives for mitigating and adapting to climate change due to Asia's rising contribution to CO_2 emissions.

In pursuing its strategic development agenda, ADB selected five core areas for support, since it cannot meet all needs of all DMCs. This is also to maximize the results, efficiency, and impact of its financial and institutional support. "Environment" is one of the five core areas selected. The other four are infrastructure, regional cooperation and integration, finance sector development, and education. On environment, ADB will emphasize the following in its programs, policies, and strategies:

- **Climate change.** ADB will help DMCs move their economies onto low-carbon growth paths by improving energy efficiency, expanding the use of clean energy sources, promoting improved urban sanitation and reduction of fugitive methane emissions, enabling sustainable transport policies and applying efficient systems, and promoting sustainable land use and forestry.

  ADB will also help DMCs adapt to the unavoidable impacts of climate change by addressing vulnerability risks in national development strategies and actions, increasing the climate change resilience of vulnerable sectors such as water and agriculture, climate-proofing projects, and addressing the social dimensions.

  Disaster risk management will be a vital part of the development process. Sustainable management of forest and other natural resources for provision of clean water supplies, protection of biological diversity, and sequestration of carbon from the atmosphere to offset greenhouse gas emissions will be part of ADB's assistance to address climate change.

- **Livable cities.** To reduce the carbon footprint of Asia's cities—i.e., the amount of harmful greenhouse gases produced—ADB will assist DMCs and their municipalities in addressing a range of environmental problems resulting from rapid urbanization. These include reducing air and water pollution, supporting cleaner modes of transport, improving systems for solid-waste management, and reducing urban waste.

- **Complementary actions.** ADB will assist with mainstreaming environmental considerations into DMCs' policies and investment programs, while strengthening the legal, regulatory, and enforcement capacities of public institutions with regard to environmental considerations. ADB will continue to reinforce environmental safeguards in its operations and in country systems, promote and support regional cooperation to provide

effective approaches and solutions on shared environmental public goods, and facilitate the transfer of knowledge on environmental management and new technologies.

Environmental Assistance

The environmental assistance extended by ADB to its DMCs spans more than two decades. Since the mid-1980s, ADB has been actively assisting its DMCs in developing their environmental policies and institutions. An earlier emphasis on building capacity for the application of environmental impact assessment to development projects has been broadened, and now includes policy, institutional, and investment support across a broad range of topics. ADB is also working with a variety of development partners. As indicated in this report, ADB is increasingly responding to requests from ministries responsible for key development sectors—such as energy, water, transport, and agriculture—to help them ensure that environmental considerations are built into the policies, plans, programs, and investments they manage. ADB has also been supporting subregional programs to help find solutions to common and transboundary environmental problems, including climate change concerns.

From 1995 to 2008, ADB has supported more than 150 projects amounting to almost $12 billion. Its recent environmental performance has shown a marked improvement. Based on a 3-year rolling average from 2006 to 2008, annual environmental lending averaged 19% of total lending, a sharp increase from the 3-year rolling average from 1995 to 1997 of 10% before the approval of the *Environment Policy* in 2002.

ADB has also assisted its DMCs in strengthening their legal, institutional, and regulatory frameworks, and developed staff and institutional capacities on environmental safeguards and other related areas. The number of technical assistance projects, valued at $450 million from 2003 to 2008, has contributed to strengthened legal and institutional frameworks, and has developed human resource capacities on the environment and safeguards.

ADB has also helped countries improve the environmental life-support systems that shape our climate and clean our air and water. ADB is responding to these threats with a wide range of initiatives. Under Strategy 2020, ADB is playing a substantive role in promoting the mitigation of, and adaptation to, climate change in DMCs. In this regard, ADB made notable progress in implementing its clean energy initiatives, surpassing the $1 billion annual lending target set in 2005. It also began to shift transport and urban investments to low-carbon alternatives, and established financing schemes in three areas: mobilizing concessional funds, catalyzing private sector capital, and maximizing the use of market mechanisms such as carbon financing.

To facilitate greater investments by DMCs for projects to address the causes and consequences of climate change, ADB has set up and supported the establishment of several funds. To support climate change mitigation projects, it set up the Clean Energy Financing and Partnership Facility, the Asia-Pacific Carbon Fund, and the Future Carbon Fund. To support climate change adaptation and mitigation interventions, it set up the Climate Change Fund. Funds for adaptation activities are also being made available from various internal sources such as the Water Partnership Facility, and Poverty and Environment Fund. Along with other multilateral financing institutions, ADB also helped establish the Climate Investment Fund.

Under its climate change adaptation program, ADB is helping the region's economies

mainstream adaptation and enhance their resilience to adverse impacts. It will continue to incorporate vulnerability risk management into countries' national development strategies and actions, increase climate resilience of vulnerable sectors, climate-proof projects, and address the social dimensions of climate change. Achievements in this regard included the design of five climate change risk-reduction projects financed through the Climate Change Fund, and approval of eight grants to implement adaptation interventions in nine DMCs. ADB also helped countries prepare climate change implementation plans to pave the way for incorporating mitigation and adaptation interventions into country partnership strategies.

ADB has carried out a wide range of regional environmental programs in partnership with governments, multilateral and bilateral development agencies, nongovernment organizations (NGOs), academic institutions, and the private sector. For instance, ADB supports interventions to manage land degradation in Central Asia, prevent the fragmentation of biodiversity corridors in the Greater Mekong Subregion (GMS), among others, and mitigate the impacts of transboundary dust and sandstorms and urban and industrial air pollution in northeast Asia. ADB also supports the demonstration of innovative ways to improve the air quality of Asian cities, the synthesis and sharing of lessons learned from poverty reduction projects that also promote environmental improvement, strengthening environmental enforcement and compliance, and the promotion of the 3R (reduce, reuse, and recycle) initiative to improve resource use in the region.

ADB ensures that environmental safeguards are integrated into the design, construction, and implementation of projects. During the early stages of environmental assessment, information is made available to, and consultations held with, affected groups and local NGOs. ADB is reviewing its three safeguard policies—on environment, involuntary resettlement, and Indigenous Peoples—to improve their effectiveness and make them more relevant to changing client needs. A new policy paper is expected in 2009.

ADB's environmental assistance in various forms from 2003 to 2008 are described in the next chapter.

Purpose, Structure, and Scope of Report

This report compiles in one volume a snapshot of ADB's strategies and programs, loan, and technical assistance projects with environmental sustainability as a theme. The report also presents partnerships and actions that ADB is supporting to promote environmentally sustainable economic growth in Asia and the Pacific.

The report is intended for ADB's stakeholders—its borrowers or clients, development partners, NGOs, civil society, and the private sector—and is structured as follows:

Chapter 1 describes development trends in the region, characterized by rapid economic growth in some countries and a slower pace in others, and the environmental problems accompanying both growth processes. It also presents ADB's policy and strategic framework that guides its environmental actions.

Chapter 2 presents ADB's environmental actions from 2003 to 2008 and projects approved in 2008 supporting environmental sustainability, and describes ADB's safeguard policy compliance framework and the recent developments in its safeguard policy

update. This chapter also describes trends in environmental lending and technical assistance and grants from 2003 to 2008, and compares this with ADB's performance before approval of its *Environment Policy* in 2002. It outlines the manner by which ADB mainstreams environment into its country-level strategic planning. It also highlights recently approved regional programs, projects, and capacity development and policy dialogue with the governments of its DMCs.

Chapter 3 provides an account of the major environmental initiatives ADB supports and partnerships forged with its development partners to catalyze assistance to its DMCs, complementing and supplementing ADB's actions described in Chapter 2.

Chapter 4 outlines ADB's strategies and actions to promote environmentally sustainable growth in the region in accordance with Strategy 2020.

A list of loan and technical assistance projects with environmental sustainability as a theme approved from 1995 to 2008 is provided as a set of appendixes. A list of knowledge products related to the environment is also included.

Chapter 2
Environmental Assistance

Promoting environmentally sustainable growth is central to ADB's mission of reducing poverty and improving the living conditions and quality of life of people in Asia and the Pacific. To achieve this, ADB (i) mainstreams environment into country partnership strategies (CPSs), sector strategies, subregional programs, and projects; (ii) supports projects with environmental sustainability as a theme, in particular those that address climate change mitigation and adaptation, and promote livable cities and agriculture and natural resource management; (iii) strengthens DMCs' policy, legal, and institutional frameworks; and (iv) integrates environmental safeguards into its projects. Chapter 2 highlights ADB's approaches, outputs, and achievements in these areas from 2003 to 2008.

Mainstreaming Environmental Considerations into Country Partnership Strategies

ADB mainstreams environmental considerations at the early planning stage. To provide inputs to CPSs, country environmental analysis (CEA) reports are prepared. These reports cover general environment status and trends in a country; discuss the policy, legislative, institutional, and budgetary framework for environmental management; and address principal constraints and barriers to improved environmental management in sectors relevant to ADB operations. CEA reports also present the main environmental opportunities and issues associated with ADB's CPSs. In some CEAs, environment road maps are produced, and recommendations for lending and nonlending products are proposed and included in CPSs. This helps set the stage for technical assistance, grants, and loans for projects or programs with environmental sustainability as a theme, as well as for traditional projects that include environmental components.

ADB closely coordinates with the government and other development partners in preparing the CEAs. From the approval of the *Environment Policy* in 2002 until the end of 2008, 21 CEAs and one regional strategy have been prepared.[15] These CEAs have provided valuable inputs in CPS formulation. Box 1 shows an output of environment mainstreaming into the CPS prepared for the PRC.

[15] www.adb.org/environment/cea.asp

Box 1. 2008 PRC Country Partnership Strategy
Pillar II on Resource Efficiency and Environmental Sustainability

ADB will help the PRC build an efficient and environmentally friendly society. ADB's operations will feature efforts to increase efficiency in transport by promoting railways, improving existing rail and road transport networks, and introducing intelligent transport systems. In the energy sector, ADB will help the Government introduce, demonstrate, and promote adoption of efficient and clean means of generating, transmitting, and distributing energy to industry and households in urban and rural areas. ADB's operations in the energy sector can help the PRC find cost-effective ways to move toward an economy based on clean and efficient energy. All energy sector lending will be expected to help manage the local and global environment, and ADB will introduce and promote adoption of technologies to cut GHG emissions.

In the cities, ADB will help enhance environmental sustainability through improvements in water supply, wastewater treatment and management, solid waste management, traffic management, and integrated urban development. Investments will be supported by the development of an appropriate policy and regulatory environment, as well as economic instruments for environmental management, including tariffs for clean energy, water supply, wastewater, and solid waste.

ADB will also help promote sustainable rural ecosystem management, manage scarce natural resources, and meet environmental challenges. To reach these objectives, ADB will promote river basin and ecosystem management, efficient use of natural resources, and the value chain of agricultural production. ADB will work with local agencies, including environmental bureaus, to strengthen staff and institutional capacity and to promote analysis and decision making by engaging civil society.

Source: PRC Country Partnership Strategy. 2008.

Supporting Projects with Environmental Sustainability as a Theme

Lending Performance

From 2003 to 2008, ADB supported 82 projects with environmental sustainability as a theme with cumulative loan value of $6.7 billion. Compared with 155 projects with environmental sustainability as a theme valued at about $12 billion approved over the 14 years 1995–2008, ADB's support for projects with environmental sustainability as a theme in just the last 6 years (2003–2008) constitutes more than 50% of the cumulative number and loan value of these 155 projects.

ADB's supported projects with environmental sustainability as a theme have shown a generally upward trend from 2003 to 2008 (Figure 2.1). As a percentage of the total loan value each year, environmental lending also shows a marked upward trend, from a low of 5% in 2003 to a high of 25% in 2008 (Figure 2.2). During 2003–2008, an average of 14 projects were approved each

Fig. 2.1: Projects with Environmental Sustainability as Theme: Loan Amount and Number of Projects, 2003–2008

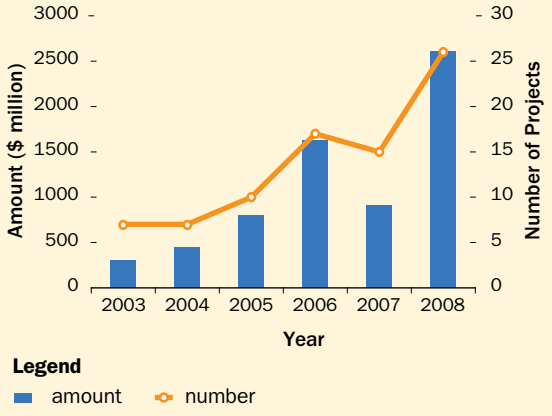
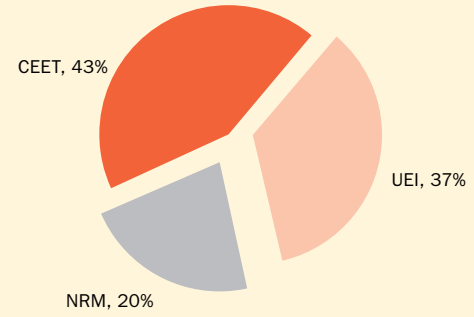


Fig. 2.2: Projects with Environmental Sustainability as Theme, 2003–2008: Percent of Annual Total Approvals (Loan Value)

Fig. 2.3: Projects by Environmental Subtheme, 2003–2008: Percent of Cumulative Total Approvals (Loan Value)



CEET - cleaner or energy-efficient technology; NRM - natural resource management; UET - urban environmental improvement

year, with total loan value of $1.12 billion, constituting 20% of the total in number of projects and 15% of the total in loan value.

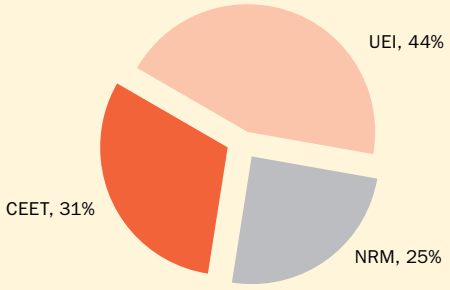
ADB's 2008 environmental lending record is particularly good. Twenty-six loan projects with environmental sustainability as a theme were approved for $2.61 billion. Not only is the 2008 environmental lending record ADB's highest since 1995, but it also pushed up the proportion of projects supporting environmental sustainability in 2006–2008 to 24%.[16] Moreover, compared with 2007, the 2008 environmental lending record represents increases of 73% in number and 186% in loan value of approved projects.

Appendix 1 lists projects with environmental sustainability as a theme approved from 1995 to 2008.

Top three environmental subthemes. From 2003 to 2008, the majority of projects supporting environmental sustainability involved the use of cleaner or energy-efficient technologies (43% of cumulative loans), followed by urban environmental improvement (37%) and natural resource management (20%) projects (Figure 2.3).

In terms of number of projects, ADB supported more urban environmental improvement projects (44%), followed by projects using cleaner or energy-efficient technology (31%), and projects that promote agriculture and natural resource management (25%) (Figure 2.4).

Fig. 2.4: Projects by Environmental Subtheme, 2003–2008: Percent of Cumulative Total (Number of Projects)



CEET - cleaner or energy-efficient technology; NRM - natural resource management; UET - urban environmental improvement

[16] The proportion of projects supporting environmental sustainability over a 3-year rolling average from 2005 to 2007 was about 20%.

Fig. 2.5: Lending Trends by Environmental Subtheme (Number of Projects), 2003–2008

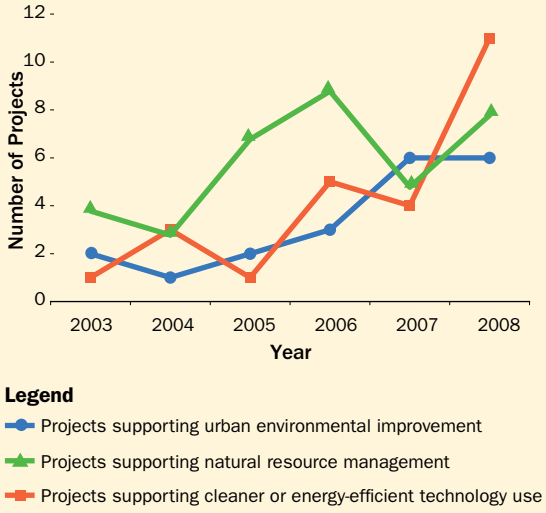
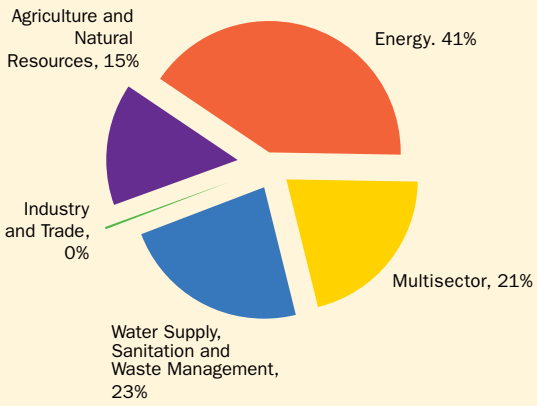


Fig. 2.6: Projects with Environmental Sustainability as Theme by Sector, 2003–2008: Percent of Cumulative Total Approvals (Loan Value)



Some projects carry multiple subthemes. For example, almost all projects aiming to promote the use of cleaner or energy-efficient technologies are expected, over the long term, to contribute to the protection of globally significant biodiversity and/or respond to climate change concerns.

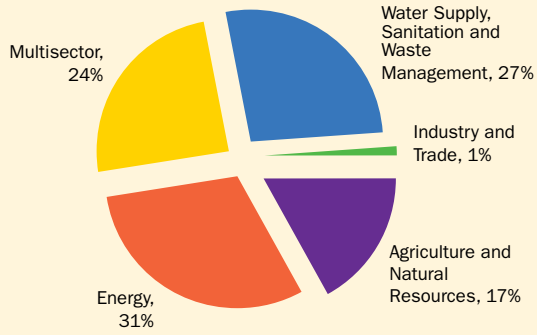
The trend in environmental lending by subtheme shows a sharp upward trend in all three environmental subthemes (Figure 2.5).

Top four sectors. Compared with the total cumulative loan amounts for 2003–2008, the energy sector registers the highest proportion in lending volume (41%), followed by the water supply, sanitation and waste management sector (23%), multisector (21%), and agriculture and natural resources (15%) (Figure 2.6).

In terms of proportion of projects by number, the energy sector leads (31%), followed by water supply, sanitation, and waste management (27%); multisector (24%); agriculture and natural resources (17%); and the industry sector (1%) (Figure 2.7).

Projects in each sector varied in focus and outcome. In the agriculture and natural resources sector, ADB is helping Indonesia, the Philippines, and Sri Lanka manage their marine and coastal resources.

Fig. 2.7: Projects with Environmental Sustainability as Theme by Sector, 2003–2008: Percent of Cumulative Total (Number of Projects)

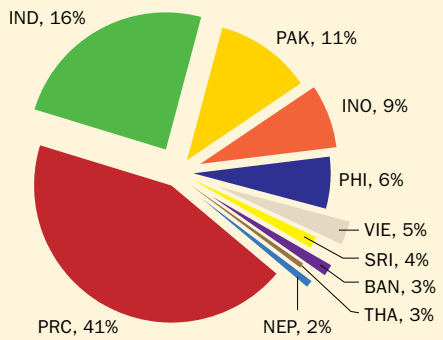


ADB is also helping sustain the Tonle Sap waterway in Cambodia; conserve wildlife in Sri Lanka; and protect the Sanjiang wetlands, promote the application of an integrated ecosystem in Ningxia, and support dryland sustainable agriculture in the PRC. Further, ADB is supporting its DMCs' efforts to conserve forest, soil, and water resources, and promote integrated area development and integrated pest management.

Multisector environmental projects invariably included water supply and sanitation, solid-waste management, and natural resource management components, while projects in the energy sector focused on the use of low-carbon energy sources (e.g., use of natural gas), energy-efficient technologies (e.g., use of supercritical steam technology), and renewable energy sources (wind and hydropower). In the industry sector, a lone tourism project was approved.

Top 10 borrowing DMCs. Of the borrowing countries, the top 10 in terms of cumulative loan amounts (in descending order) are the PRC, India, Pakistan, Indonesia, the Philippines, Viet Nam, Sri Lanka, Bangladesh, Thailand, and Nepal (Figure 2.8).

Fig. 2.8: Top 10 Borrowers for Projects with Environmental Sustainability as Theme, 2003–2008: Percent of Cumulative Total Approvals



The PRC borrowed mostly for projects involving the use of low-carbon energy sources or energy-efficient technologies. The PRC also borrowed for multiple urban environmental improvement projects, and a growing number of projects promoting improved natural resource management. India borrowed mostly for urban environmental improvement, and recently for renewable energy (biomass, wind, and hydropower) and thermal power projects, some of these using supercritical steam technology. Indonesia and Bangladesh received loans mostly to improve the management of their natural resources. The Philippines and Pakistan borrowed to improve the management of their natural resources and urban environment.

Record of Technical Assistance and Grants

Mounting evidence of the cost of environmental neglect and growing public demand for environmental quality have drawn increasing attention to the state of the environment in Asia and the Pacific. However, government efforts to mainstream environment into policies, plans, and programs have not always kept pace. Although DMCs have established legal frameworks and institutions for environmental protection, not all have adopted policies, regulatory systems, and institutional arrangements that overcome market failures, remove perverse incentives (e.g., subsidies on polluting inputs), and facilitate compliance and enforcement. A robust policy framework that would secure greater involvement of the private sector in providing environmental services is also needed.

To help its DMCs address these needs, ADB has provided technical assistance projects and grants to (i) integrate environmental objectives into national and sector economic development processes; (ii) introduce policies and regulatory systems for environmental management, including the use of economic instruments;

(iii) promote good governance to ensure compliance and enforcement; and (iv) enhance education, public awareness, and capacity building in various environment-related fields.

These country-specific and regional TA projects and grants also focused on the five environmental subthemes discussed above.

From 2003 to 2008, the number and volume of all technical assistance (advisory technical assistance, project preparatory technical assistance, and regional technical assistance) and grants with environmental sustainability as a theme (322 in all, valued at $451 million) varied annually (Figure 2.9). In value, the trend is upward, but in number the trend is downward. In terms of percentage of ADB-wide total TA value, country and regional technical assistance projects and grants with environmental sustainability as a theme also showed annual variation from 2003 to 2008, indicating a general upward trend from 2006 to 2008 (Figure 2.10). As noted in Figure 2.9, the 2005 TA and grants with environmental sustainability as a theme showed an all-time high in number and value during 2003–2008. However, given the ADB-wide-high total of TA and grant value in 2005, the proportion of TA and grants with environmental sustainability as a theme is relatively lower, particularly when compared with 2004 (see also Figure 2.10).

Fig. 2.9: Technical Assistance and Grants with Environmental Sustainability as Theme: Amount and Number of TA and Grants Approved, 2003–2008

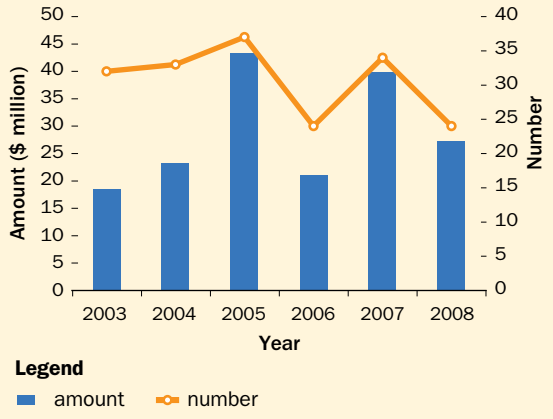
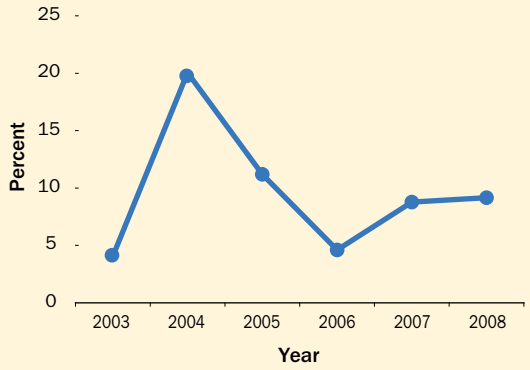


Fig. 2.10: Technical Assistance and Grants with Environmental Sustainability as Theme: Percent of Annual Total TAs and Grants Approved, 2003–2008



Appendix 2 lists all TA (project preparatory, advisory, and regional) and grants with environmental sustainability as a theme approved from 1995 to 2008.

In line with Strategy 2020's increased operational emphasis on environment, ADB supported projects with environmental sustainability as a theme. Some of these projects are discussed below.

Responding to Climate Change

Large parts of Asia are in a sustained period of fast economic growth, with an ever-increasing demand for energy essential to drive the growth process. New energy infrastructure is being installed at unprecedented rates across the region, and energy use is expected to grow faster in Asia than in the rest of the world over the next two decades. Indeed, "business as usual" forecasts anticipate energy use in Asia to increase by 89% between 2006 and 2030, at which point the region, and in particular

the rapidly developing economies such as the PRC and India, will be consuming 30% of the world's energy. While energy demand among the OECD countries will fall from 59% of the world's energy in 2000 to 47% by 2030, it will rise from 20% to 27% in developing Asia.

The International Energy Agency estimates that energy supply infrastructure in developing Asia will require a staggering $6.3 trillion in investments between now and 2030, $3.7 trillion of that amount for the PRC alone. The energy investments are strongly carbon-intensive, with major energy-consuming countries opting for coal-fired power generation. More than half of the anticipated investment of $6.3 trillion is projected to be in electricity generation, primarily from coal-fired power plants. This trend will contribute significantly to the rise in greenhouse gas emissions in Asia. The region's share of greenhouse gas emissions worldwide has already increased from less than 9% in 1973 to 24% in 2003, and is projected to increase to 29% by 2030.

In other parts of the region, access to energy services is limited, with 1.7 billion people still relying on traditional and harmful biomass for cooking. The prospects for development, education, and livelihoods are limited for the 1 billion people in South Asia who lack access to electricity. Providing access to energy services is essential to reduce poverty and meet the Millennium Development Goals (MDGs).

Under Strategy 2020, ADB is playing a substantive role in mitigating climate change and providing access to energy services in the region. As part of this commitment, ADB Management established the Climate Change Coordination Unit in its Regional and Sustainable Development Department. ADB's assistance is described below.

Promoting the use of clean energy. ADB is helping economies achieve better energy efficiency to curb energy demand growth, and is also promoting low-carbon energy options. Several ADB regional initiatives and projects are promoting demand- and supply-side energy efficiency measures and renewable energy use in the region. On the energy demand side, ADB is fostering energy efficiency improvements across the industry, commercial, and municipal sectors through activities such as promoting the use of more efficient lighting, cooling, and space heating. In the transport sector, ADB is advancing mass transport systems through the use of more efficient vehicles and cleaner fuels, as well as sound urban mobility planning. On the supply side, ADB is promoting efficient energy generation, transmission, and distribution, as well as the use of renewable energy (such as biomass, geothermal, wind, small hydropower, and solar) and cleaner fuels (natural gas).

To help ADB's DMCs achieve significant measurable change in their energy consumption patterns while securing a low-carbon sustainable energy future, ADB established the Energy Efficiency Initiative in 2001. Currently in its second phase of implementation, the initiative is set to boost investments in clean energy to $1 billion per year starting in 2008. For this, the Energy Efficiency Initiative supported enabling policy and market interventions intended to scale up energy efficiency and other clean energy investments for six priority countries (the PRC, India, Indonesia, Pakistan, the Philippines, and Viet Nam). This $1 billion target in annual clean energy investments was achieved almost 7 months ahead of schedule, on 9 June 2008.

To help finance the Energy Efficiency Initiative, the Clean Energy Financing Partnership Facility (CEFPF) was established in April 2007. The initiative designed the CEFPF to (i) fund small energy efficiency investments that require quick transactions, (ii) finance some technology transfer costs of clean technologies, and (iii) provide grant assistance

for activities such as developing the knowledge base for clean energy technologies. An additional $3 million grant to expand the initiative to include Afghanistan, Bangladesh, Cambodia, Lao People's Democratic Republic (Lao PDR), Mongolia, and Uzbekistan was approved in November 2008.

Energy efficiency improvements. Several approaches to improving energy efficiency are demonstrated by projects such as the Guangdong Energy Efficiency and Environment Improvement Investment Program, which aims to support the retrofitting of existing buildings, resulting in energy savings of 20%–40%. The Rural Electrification Corporation of India will finance investments in infrastructure to expand access to electricity in the rural sector by providing financing for investments in improved transmission and distribution networks. The Municipal District Energy Infrastructure Development approved in the PRC is expected to establish, acquire, and rehabilitate district energy systems to address operational inefficiency and financial constraints faced by municipalities.

Mobilizing finance for clean energy investments. A number of approved projects aim to provide funds to improve energy efficiency or finance clean energy projects. The Guangdong Energy Efficiency and Environment Improvement Investment Program in the PRC will provide financing for use of energy efficiency technologies as described in Box 2.

Regional technical assistance will also develop the Seed Capital Assistance Facility (SCAF). The SCAF, funded by the Global Environment Facility (GEF) and jointly implemented by ADB and the United Nations Environment Programme (UNEP), will provide TA to private equity fund managers and local entrepreneurs to develop sustainable clean energy funds and early-stage funding windows. The SCAF will also share incremental enterprise development and transaction costs. It will also encourage taking on higher-risk portfolios through a seed capital return enhancement offered on a per-project basis. The increasing number of indigenous clean energy enterprises financed will deliver a range of projects, products, and services to mitigate greenhouse gas emissions.

Using up to $100 million in seed capital under the Private Sector Funds for Clean Energy Project, ADB is helping establish five private sector funds with a total target investment of up to $1.2 billion in clean energy projects in Asia. The funds will receive up to $20 million in capital from ADB. The funds are expected to demonstrate the credibility of private equity in the emerging clean energy

Box 2. Guangdong Energy Efficiency and Environment Improvement Program

The pilot program is ADB's first credit guarantee to mobilize commercial financing in the PRC, and will initially target energy efficiency projects for buildings in the more industrialized part of the country (i.e., southern and eastern PRC). The program will support the retrofitting of existing buildings, typically leading to energy savings of 20%-40%. The program will also support energy efficient "green buildings." The implementation of the pilot program in the PRC's southern Guangdong province will (i) bring energy efficient technology to major power consumers; (ii) provide grants/loans to major energy consumers, funding projects to retrofit plants and buildings with energy efficient technology; (iii) lower coal consumption by 175,813 tons every year, which translates into an annual energy savings of 553 gigawatt-hours (GWh); and (iv) benefit end-users with an estimated $43 million savings in electricity bills.

The Clean Energy Financing Partnership Facility (CEFPF) is financing the capacity-building interventions to implement the investment program. Specifically, CEFPF support will focus on developing and implementing training programs, preparing monitoring and evaluation templates, assisting in subproject appraisal and energy savings estimation, and verification of different energy saving technologies.

Source: CEFPF Semiannual Progress Report, January to June 2008.

Box 3. Private Sector Funds for Clean Energy Projects

Fund	Target Size (number of projects)	Projects	Focus Area
MAP Clean Energy Fund	$400 million (10-15)	Geothermal, bioethanol	South Asia; Indonesia
China Environment Fund	$200 million-$250 million (15-20)	Reducing, reusing, recycling natural resources	PRC
GEF South Asia Clean Energy Fund	$200 million (12)	Energy efficiency, clean energy	South Asia
Asia Clean Energy Fund	$200 million (15)	Palm oil, solar, waste-to-energy, biodiesel, power plant rehabilitation	Asia
China Clean Energy Fund	$100 million– $150 million (8-12)	RE, energy savings, EE, alternative fuels	PRC

Source: ADB. 2008. Proposed Equity Investment in Asian Clean Energy Private Equity Funds. (Loan 7275, approved in 17 April 2008 for $20,000,000)

sector in developing Asia, and mobilize capital to support other private equity funds. Their features are summarized in Box 3. ADB is also extending loans to the private sector for the development of wind energy sources in Gujarat and Karnataka, India (Box 4).

Expanding renewable energy sources. New investments in renewable energy include hydropower projects in India, the PRC, and Viet Nam, and wind power projects in the PRC and India. Most of these projects are being implemented by the private sector, and several are being considered eligible for carbon credits under the Clean Development Mechanism (CDM). Subprojects under the Himachal Pradesh Clean Energy Development Program in India and the Gansu Heihe Rural Hydropower Development Investment Program in the PRC are expected to obtain carbon credits from the CDM.

Also, through the Carbon Market Initiative (CMI), ADB provided upfront financing and technical support to more than 40 mitigation projects.

Box 4. Developing Wind Power Projects in India

The project will support energy diversification in India in an environmentally sustainable manner through the funding of two wind energy facilities in the Indian states of Gujarat and Karnataka. It will also help enhance private sector participation in energy generation by demonstrating the successful implementation of large-scale wind power projects. ADB will provide a loan to the Gujarat Paguthan Energy Corporation Private Limited (GPEC) to finance the Samana Wind Power Project in Gujarat, India and the Saundatti Wind Power Project in Karnataka, India. While they are two of the leading states in India for wind power generation, Gujarat and Karnataka continue to suffer from significant power shortages. Both states hold greater potential for wind power projects due to long coastlines and suitable inland areas. The new projects will, in aggregate, add 183.2 MW in capacity to the two states.

The proposed loan aims to improve India's environmental standards by reducing GHG emissions by over 400,000 tons of CO_2 per year and approximately 8 million tons of CO_2 during the minimum project life of 20 years. The two wind power projects are part of a recent series of projects that ADB is developing in partnership with India's private sector to bring cleaner sources of energy to India's population, helping the Government meet its goal of "power for all" by 2012.

Source: ADB. 2008. Gujarat Paguthan Wind Energy Financing Facility in India ($45 million).

Helping Countries Adapt to the Effects of Climate Change

Adaptation has clearly become a vital complement to mitigation. Various studies estimate that, even if atmospheric CO_2 concentrations are kept below dangerous levels through concerted international action, adapting to the inevitable climate change impacts will cost poor countries at least $10 billion and as much as $150 billion per year, depending on whether these figures refer to infrastructure alone or broader economic impacts. Costs include necessary adjustments to existing infrastructure in response to floods, storm surges, water shortages, cyclones, and other increased risks brought on by climate change.

Unfortunately, the majority of ADB's developing member countries are particularly prone to one or more of these risks and are not yet adequately prepared to deal with the resulting effects on agricultural output, labor productivity, health, infrastructure, and internal displacement. The region's vulnerability to climate change is dictated by its unique physical and socioeconomic attributes, including high population density, relatively low income levels, long coastlines, and the prominence of agriculture and fishing in providing livelihoods for the rural poor.

Under its climate change adaptation program, ADB is helping the economies of Asia and the Pacific mainstream adaptation and enhance their resilience to adverse impacts. ADB's support in this area included the design of five climate change risk-reduction projects financed through the Climate Change Fund, and approval of eight grants to implement adaptation interventions in nine DMCs. ADB also helped countries prepare climate change implementation plans to incorporate mitigation and adaptation interventions into country partnership strategies.

Not only loan and grant projects but also technical assistance projects were approved by ADB to support DMCs' use of cleaner or energy-efficient technologies and to help them adapt to the effects of climate change. These various TA projects aim to (i) improve energy security and decrease the rate of greenhouse gas emissions by promoting energy efficiency initiatives in municipalities in Thailand; (ii) develop an improved, sustainable institutional framework for managing environment protection and climate change in Nepal that will complement the country's National Action Plan for Adaptation; (iii) demonstrate the industrial size capacity of the Integrated Gasification Combined Cycle, leading to its commercial deployment; and (iv) develop the required policy, legal, and institutional framework for, and pipeline of, energy assistance improvements for Cook Islands, Papua New Guinea, Samoa, Tonga, and Vanuatu (Box 5).

Box 5. Promoting Energy Efficiency in the Pacific

The technical assistance will help Cook Islands, Papua New Guinea, Samoa, Tonga, and Vanuatu in the development of the required policy, legal, and institutional framework, and will build a pipeline of energy efficiency assistance projects for funding or cofinancing by ADB, GEF, or other sources. The outcome will be an energy efficiency assistance project or projects, which will fund the development of capabilities and energy efficiency improvements in the industrial, commercial, residential, and public sectors.

The project is funded under the Clean Energy Fund (CEF), which is administered under the Clean Energy Financing Partnership Facility (CEFPF).

Source: ADB. 2008. Promoting Energy Efficiency in the Pacific. (TA 6485, approved in 12 September 2008 for $1,200,000)

Building Livable Cities

The urban population of Asia is growing faster than ever before. Estimates show that there will be over 1.1 billion more Asian urban residents in 2030 than there were in 2005—an average increase of 44 million people every year. This rapid urban growth has created massive environmental problems of air pollution, solid waste, and toxic effluents which continue to pose a development challenge in Asia. They also make unsustainable demands on soil and water supplies for food production and on forests for timber and paper use. For most major cities in Asia, growth rates are too rapid for infrastructure to keep up with the demand for services. More than half a billion Asians live in slums, and air pollution is affecting the health of millions.

Asian cities have large environmental footprints that endanger both their economic base and the global environment. An ecologically sustainable footprint is thought to be 1.8 ha per person. The average footprint in the PRC is 1.6, despite its huge population. But Shanghai's is already 7.0 ha per person, and is fast approaching that of a typical American city—9.7 ha per person. Cities are also major contributors to climate change, consuming most of the electricity and fuel used by transport, industry, and households for domestic heating and cooking, as well as most of the energy used in the construction of buildings, infrastructure, and other fixed assets. Asian cities are likely to contribute more than half of the rise in greenhouse gases over the next 20 years.

Cities are highly vulnerable to the consequences of climate change, including flooding, landslides, heat waves, and water shortages. Asian cities that are vulnerable to rising sea levels include Bangkok, Chennai, Dhaka, Jakarta, Manila, and Tianjin. The potential indirect impacts of climate change on cities range from increased energy demands for heating or cooling to large in-migration of environmental refugees and food shortages.

Without effective urban management, the continued growth of cities will exacerbate air and water pollution, the excessive generation of solid waste, the lack of potable water and sanitation facilities, the proliferation of slums, and traffic congestion. A key challenge is to maintain living standards while reducing environmental damage from urban-based production, consumption, and waste generation. Although consumption today is high, technology is available to substantially reduce the demand for fossil fuels without adversely affecting the quality of life.

Consistent with the priorities of ADB's Strategy 2020, which highlights the issues of urban development, ADB is implementing several initiatives to promote livable cities, such as the Water Financing Program (Box 6), which aims to double investments for water from 2006 to 2010, and the Cities Development Initiative for Asia (CDIA) (Box 7), which aims to build capacities of Asian cities for planning investments and for structuring their financing in relation to urban infrastructure and

Box 6. Water Financing Program: Update

ADB launched the Water Financing Program (WFP) to double investments in the sector between 2006 and 2010. As of June 2008, $2.8 billion had been posted in new investments, with another $8 billion programmed through 2010. By the end of 2007, water-related projects accounted for 20% of ADB's ongoing project portfolio, and this number is expected to rise to 25% by 2010. As of 2007, the breakdown of ADB's portfolio of ongoing water projects was 65% for urban water, 20% for rural water, and 15% for basin water.

ADB will continue to use the WFP to help clients adapt to changing needs in the region, including the food price crisis, climate change, risk management, governance, and knowledge management.

Box 7. Cities Development Initiative for Asia

The Cities Development Initiative for Asia (CDIA) was established in 2007 to assist Asian cities in bridging the gaps in institutional capacity for planning investments and for structuring their financing in relation to urban infrastructure. CDIA uses a demand-driven approach to support the identification and development of urban investment projects in the framework of existing city development plans that emphasize one or more of the following impact areas: urban environment improvement, urban poverty reduction, and climate change mitigation or adaptation. CDIA has received several applications and has started work in seven countries. Major emerging client countries include China, India, and Indonesia, which have the most GHG impact and where mitigation measures will be most useful. In addition, activities in Vietnam, Laos, Nepal and other countries likely to be heavily impacted by climate change have begun, with implications for climate adaptation activity.

Box 8. Songhua River Basin (SRB) Water Pollution Control and Management Project

Songhua River is heavily contaminated with chemicals, heavy metals, and other pollutants, with untreated wastewater being discharged directly into the river and tributaries, posing a serious threat to public health.

The project is part of a broader initiative of integrated water resource and river basin management focusing on improving the environmental condition in SRB. It aims to improve the health and quality of life for about 9.4 million urban residents in the northeastern provinces of Heilongjiang and Jilin along the SRB by improving supply of potable water, increasing wastewater treatment coverage, and enhancing solid waste management.

Tariffs will be set at levels that allow full cost recovery and a reasonable profit, but there will be measures to protect the poor, such as water bill discounts and cash rebates for households living below the poverty line. ADB is supporting public-private partnerships to help meet the large financing needs of wastewater treatment in SRB.

Source: ADB. 2008. Songhua River Basin Project in PRC. (Loan 2487, approved in 11 Dec 08 for $200 million)

sustainable transport initiatives and projects. Chapter 3 provides details on these initiatives.

Water supply, sanitation, and wastewater and solid-waste management. Projects in this sector increasingly adopted an area-wide holistic approach to environmental improvement. Few projects limited their scope to the traditional water supply and sanitation components only. Particularly in the PRC, in addition to traditional components, projects included interventions to improve the quality of air and water or the general environment of a city or urban area. These interventions invariably include wastewater and sludge treatment and solid-waste management. Other projects include flood control or surface water management, water resource protection and management, or use of cleaner technologies to reduce the load of industries polluting a surface water resource in an urban area. This is also true in India, where a project for selected towns is financing not only water supply, sanitation, and waste management (WSSWM), but also urban transport, slum improvement, and other municipal services. Solid-waste management components of other projects include the recent introduction of segregation at the household level, recycling and composting, and methane capture from landfill sites, the latter two aiming to reduce greenhouse gas emissions.

Examples of projects on improving WSSWM include upgrading existing infrastructure for water supply in Georgia, Samoa, and Sri Lanka. Some features of new projects include the incorporation of sustainable water resource management approaches, such as monitoring consumption to maintain sustainable levels of water extraction in Sri Lanka, and the introduction of cost recovery mechanisms in Samoa. A basin-wide approach to address pollution control in the Songhua River Basin in the PRC integrates wastewater treatment, water reuse, and

water resource protection (Box 8). Most of the WSSWM projects included components on strengthening institutions and capacity building on environmental management.

Urban renewal and development. Investments in urban infrastructure were made for sustainable tourism in the GMS covering Cambodia, Lao PDR, and Viet Nam and inclusive urban growth in Uttarakhand, India. Investments included water supply, sewerage system and sanitation, solid-waste management, roads and transportation, the expansion of heating supply, and slum upgrading. Baiyin City in the PRC is being transformed from a resource-exhausted mining city into an industrial center, and will serve as a model of redevelopment for other PRC towns facing dwindling mining resources. This project adopts a proactive approach through incorporation of environmental protection strategies in the development planning and investments for the Xinjiang Municipal Infrastructure and Environmental Project, in one of the poorest and most remote regions in the PRC. A project in the PRC approved in 1999 is noted to have achieved its objective of improving air quality in the three main cities of Shanxi province (Box 9).

Air quality management. Air quality has either improved slightly or remained stable over the past decade in many Asian cities, notwithstanding continued growth in urban population, energy use, greenhouse gas emissions, and motorization. Progress so far in air quality management (AQM) usually results from the application of across-the-board policy measures that have been tested in many other countries, such as banning leaded gasoline and introducing cleaner fuels and vehicles.

Use of cleaner fuels or energy-efficient technologies. ADB supports its DMCs in the use of cleaner fuels or energy-efficient technology. In the Inner Mongolia Autonomous Region, ADB is helping improve, the environment by reducing air and water pollution.[17] To improve air quality, large, efficient boilers will be installed to replace 396 existing small coal-fired boilers. Cleaner and cheaper gas will replace liquefied petroleum gas and coal. ADB is also extending financial assistance to address urban environmental concerns in Jilin province in the northeast region of the PRC. Aside from helping reduce water pollution, protect water resources, address water shortage, meet the demand for high-quality treated water, and implement effective solid-waste management, the project will reduce air pollution by reducing coal consumption and adopting more efficient central heating. The project forms part of the Songhua River Basin Water Pollution Prevention and Control Plan, a government-

Box 9. ADB Project for Improved Air Quality in Shanxi Cities*

The three main cities of Shanxi province. Taiyuan, Datong, and Yangquan, have major industrial sectors, large coal-fired power plants, and topography that traps air pollution in urban areas. In recent years, the economy of each city has grown rapidly, with associated increases in population, industrial capacity, and transport fleet. In response to these conditions, each city has implemented measures to reduce air pollution emissions. As a result, ambient levels of SO_2, total suspended particles (TSP), and nitrogen dioxide generally have decreased over the past 5 years (although ambient levels still exceed Class II standards in Datong and Yangquan). Emissions of SO_2 and TSP also have decreased or leveled out during the previous 5 years, despite accelerating urbanization.

Source: 2006 PCR. http://www.adb.org/Documents/PCRs/PRC/28388-PRC-PCR.pdf
*ADB. 1999. Shanxi Environment Improvement in People's Republic of China. (Loan 28388-01 approved 7 December 1999 for $102 million)

[17] ADB. 2006. *Inner Mongolia Autonomous Region Environmental Improvement*. Manila. (Loan 2260 approved in 2006 for $120 million)

Box 10. Using Compressed Natural Gas as Vehicular Fuel in Bangladesh

The project helped the Government of Bangladesh develop the use of domestic natural gas resources as a substitute for imported liquid fuels for the transport sector. As a result, it improved the foreign exchange position of the country, improved the ambient air quality in Dhaka, and established the foundation for private sector participation in future development of compressed natural gas-fueled transport. The reduced pollution level is estimated to generate about $48 million annually in health benefits, especially among urban poor, such as street vendors, cyclists, rickshaw pullers, drivers of three-wheelers (tricycles), and passengers.

Source: ADB. 2002. Dhaka Clean Fuel Project. Manila. (Loan 1942, approved 26 November 2002 for $42.4 million)

approved action program that sets pollution control targets from 2006 to 2010.[18]

Use of low-carbon transport fuel. In Bangladesh, ADB promoted the use of compressed natural gas instead of liquid imported fuels for vehicles (Box 10). Natural gas as a transport fuel has a number of advantages over diesel: very low particulate emissions, low emission of airborne toxins, negligible sulfur dioxide (SO_2) emissions, and a quieter and smoother ride than diesel engines. All these benefits make natural gas vehicles especially suitable for urban areas. In addition, life cycle analysis suggests that natural gas vehicles emit less greenhouse gases than gasoline-fueled vehicles.

A regional technical assistance project covering East, Southeast, and South Asia, to be implemented by the Clean Air Initiative-Asia, will focus on the collection, capture, analysis, synthesis, and transfer of AQM knowledge for the benefit of policy makers, and will include links with urban development, cleaner energy, climate change co-benefits, and sustainable transport. The regional TA project will also establish an online portal to capture, analyze, synthesize, and disseminate knowledge tailored to the needs of government policy makers in AQM and greenhouse gas mitigation and of other stakeholders who influence their decisions. It will also build and strengthen sustainable AQM Communities of Practice to enable knowledge transfer and the sharing of best practices.

ADB is assisting the PRC in the design of a National Sulfur Dioxide Emission Trading System, which aims to reduce SO_2 emissions, a major contributor to air pollution (Box 11). ADB is also helping Asian cities manage urban air quality (Chapter 3). An approved grant from the Japan Fund for Poverty Reduction

Box 11. Technical Assistance on the Design of the National Sulfur Dioxide (SO_2) Emission Trading System, PRC

The PRC will continue to depend heavily on coal for power generation in the foreseeable future. Emissions from coal-fired power generation, particularly SO_2 and oxides of nitrogen (NOx), are significant contributors to air pollution and the primary cause of acid rain. Unprecedented growth in the energy sector since 2002 has led to steadily increasing SO_2 emissions, which hit 25.9 million tons in 2005, the highest in the world.

Through a technical assistance intervention, ADB will assist in the design of a National Sulfur Dioxide Emission Trading System. The introduction of an SO_2 trading system provides a market-based mechanism to manage SO_2 emissions at the least economic cost. The Government sets a national emissions cap, then establishes an emissions trading platform based on emission allowances allocated to SO_2 emitters. Emission sources with excess reductions can then trade their allowances. The trading system operates to identify least-cost emission reductions.

Source: ADB. 2008. Design of the National Sulfur Dioxide Emission Trading System in PRC. (TA 7191, approved 10 December 2008 for $500,000)

[18] ADB 2007. *Jilin Urban Environmental Improvement Project in the PRC*. Manila. (Loan 2360 approved 29 October 2007 for $100 million)

intends to lower the coal fuel consumption in Mongolia used for household space heating through the use of highly insulated blankets. The grant is expected to contribute to the reduction of urban pollution during winter.

ADB also approved TA projects to conduct analytical studies to improve the urban environment. In the PRC, the TA Urban Wastewater Reuse and Sludge Utilization Policy Study will strengthen the wastewater reuse and sewage sludge utilization management system and make it more effective and efficient. Its outcome will be the adoption of a set of policies and tariff guidelines to promote the reuse of wastewater, as well as technical and market-based approaches to encourage sustainable sludge disposal, including energy recovery, by municipalities in the PRC.

Supporting Agriculture and Natural Resource Management

Many Asian and Pacific economies continue to depend on products from fields, forests, rivers, wetlands, mountain pastures, and other natural or agricultural systems to support rural incomes and provide food, wood, and other fiber supplies. Natural systems also provide healthy watersheds, which improve water quality and reduce the risk of landslides and damaging floods; estuaries, which support fisheries; and natural forests, which serve as biodiversity storehouses and sequester carbon from the atmosphere to offset the release of greenhouse gases. The degradation of such "natural infrastructure" across the region translates into a loss of productive assets.

Borrowing in this sector has gradually shifted towards sustainable natural resource (land, marine and coastal, forest, and groundwater) management, which is essential because of the strong link between this sector and poverty reduction. New projects in this sector focus on water resources management in the PRC, Pakistan, and Uzbekistan, and land use projects in the PRC. The production side covered high-value aquaculture, livestock, cotton, fruits, and vegetables, and the use of biogas through an integrated pig farming system. Projects also supported development of rural infrastructure, flood control and risk management, and calamity damage mitigation.

Water resources management. In Pakistan, ADB is assisting four *barani* (rainfed) areas to address the problem of water scarcity and improve farmers' livelihood (Box 12). The project involves the construction of dams and related structures to increase water availability in the area and improve watershed management to prolong the life of dams. The project will also finance rural water supply for communities in the vicinity of the dam, community-managed irrigation distribution networks, and agriculture extension services to support the transition to irrigated agriculture. ADB also provided institutional support.

In the PRC, the Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin Project will demonstrate innovative integrated ecosystem and water resources management in the Baiyangdian Lake, one of the most important and vulnerable ecosystems in the PRC (Box 13). The project has three key outputs: improved water resources and flood management, strengthened wastewater management and pollution control, and integrated water and ecosystem management. The project includes the establishment of an integrated information system for Jiaozhou flood, water, and wastewater management and an emergency response system.

Land rehabilitation and sustainable land use. Some projects in this sector aim to reduce pressure on land by providing production support and new technologies that increase

Box 12. Integrated Approach to Water Resources Management in *Barani* (or Rain-fed) areas in Punjab, Pakistan

The project will develop water resources and improve their management in four districts of the *barani* (or rain-fed) areas of Punjab that suffer from water scarcity. The project intends to improve household income and health by increasing crop and livestock productivity through irrigation development and better access to water and sanitation.

Activities will include (i) the construction of dams and related structures to increase water availability in the area; (ii) watershed management to enhance the dams' life expectancy; (iii) development of the rural water supply for communities in the vicinity of the dam; (iv) development of community-managed irrigation distribution networks; (v) agriculture extension services to support the transition to irrigated agriculture; and (vi) institutional support.

The project will also rehabilitate and develop irrigation schemes, provide extension support, and improve watershed management in existing dams. To address the problem of sustainability and low economic returns observed in previous dam projects in *barani* areas, the project will change the subsector implementation practices and follow an integrated approach, looking simultaneously at dam development, watershed management, and command area development. Similarly, it will support devolution of the water scheme to organized water users and foster a demand-driven approach through the inclusion of social mobilization support.

Source: ADB. 2008. *Barani* Integrated Water Resources Sector Project in Pakistan. (Loan 2411/2412 approved 3 March 2008, for $75 million)

the value of production activities. Many of the recently approved projects were for the PRC, which has some of the worst land degradation problems in the world. Rapid economic growth in recent years, overuse of water and agrochemicals in agriculture, conversion of marginal desert-edge lands to irrigation for poor farming households, and rapid urban and industrial spread with high pollution have resulted in significant loss of vital ecosystem services and values.

Box 13. Helping Improve Ecosystem in a Major Basin in PRC

The project will help PRC address the reverse decades of ecological degradation to one of the one of PRC's most valuable fresh-water resources. The Baiyangdian Lake is home to 36 lake villages and 62 lakeside villages with a population of 200,000 people. It is the largest fresh water lake and wetland in north China and plays an important role in balancing the ecosystem in the area, giving it one of its nicknames, "Kidney of North China". Reeds grown in the area are used for 40% of total production or reed mats in the country. The lake is home to more than 50 types of fish and an important refueling site for migratory birds.

The size of the lake has decreased by an almost half in the past four decades because of controlled water flows, continuous droughts and soil erosion. Rising population, expanded agricultural and industrial activities, with limited solid and wastewater disposal measures, have transformed the lake into a major depository of wastewater discharges, pollutant substances and sediments. Through a range of interventions, the project will help alleviate ecosystem constraints in the basin by improving water quality and quantity.

Source: ADB. 2008. Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin Project in PRC. (Loan 2428 approved 24 June 2008 for $100 million)

ADB continues to help the PRC under the PRC–GEF Partnership on Land Degradation in Dryland Ecosystems (Chapter 3). A project under the partnership is the Ningxia Integrated Ecosystem and Agricultural Development Project, which will use an integrated ecosystem management approach. This approach emphasizes the links between natural ecosystem capacities and socioeconomic activities, and seeks to holistically rehabilitate damaged ecosystem services and functions by addressing the root causes of damaging practices to reduce rural poverty. The project will also reform policies and regulations, as well as build institutional, regulatory, and policy capacity to combat land degradation.

The Dryland Sustainable Agriculture Project in the PRC will improve dryland farming in Gansu, Henan, and Shangdong provinces. The project will benefit about 600,000 farm households and improve the production capacity of 120,000 ha in 27 counties, cities, and districts. The project will adopt a farm-to-market, value-chain approach to benefit poor farmers, local agro-enterprises, and consumers. It will introduce high-value horticulture crops and improve crop and livestock management, farm technologies, and cultivation practices.

The Central Asian Countries Initiative for Land Management (CACILM) partnership will combat land degradation and reduce poverty in six provinces and autonomous regions in western areas of the PRC. The program is on to its second phase with increased focus on climate change adaptation (more on CACILM in Chapter 3.)

Coastal and marine resource conservation. ADB will assist in implementing three initial projects under the Coral Triangle Initiative (CTI), which was launched in 2007 by six countries. The initiative aims to preserve and manage the region's marine resources. (Box 14). The Coral Triangle is a global center of marine diversity, covering 5.7 million square kilometers (km^2). It is the center of the world's coral reef biological diversity, holding more than 75% of the known coral species and more than 3,000 species of reef fish. It covers areas of Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands, and Timor-Leste.

ADB will also be supporting an integrated coastal resources management project for the Philippines to address the critical issues of sustainable management of marine and coastal resources (Box 15).

Forest resource management. ADB will provide technical assistance in the preparation of a project in Jiangxi, a mountainous province in the PRC. The aim is to improve forest management efficiency, including increase of forest yield, forest cover, and farmers' income, by (i) introducing short-cycle commercial forests, (ii) improving low-yield Moso bamboo forests, (iii) introducing high-value economic forests, and (iv) capacity building on sustainable forest management. The project is expected to contribute to balanced development, whereby rural farmers increase their income through lease of their forest land or sale of raw materials, while ensuring environmental sustainability.

Strengthening Environment Policy, Legal and Institutional Frameworks

To help strengthen governments' environment policy, legal, and institutional frameworks is one of the five thrusts of ADB's *Environment Policy*. It continues to be an important area for ADB's support under Strategy 2020.

Box 14. The Coral Triangle Initiative (CTI) and ADB Projects

The first ADB project included in the CTI covers the Western Pacific region of the Coral Triangle, and will generate sustainable livelihoods for families depending on the sea for their income and help address pressures on reefs and local fisheries. ADB and GEF will provide grant-financed technical assistance and support for pilot activities through the project, which also includes funding from the Government of Finland.

A second project will support similar efforts in participating Southeast Asian nations to protect their marine environments, ensure that fishing remains sustainable, and develop models for the sustainable financing of marine protected areas through strengthened policies and institutions.

A third project covering all six countries will support regional information exchange—providing improved access to the latest scientific data on coastal and marine management, including responses to climate change—and will help strengthen country collaboration in monitoring and carrying out the overall action plan.

Support for legislative reforms. ADB has responded to countries' requests to strengthen or develop legislation for environmental protection and natural resource conservation (India and the PRC); establish pesticides regulatory framework (Nepal) and integrated pest management (Pakistan); evaluate, strengthen, and enforce environmental standards (the PRC and the Philippines); strengthen land use policies (the PRC, Kazakhstan, and Mongolia); and promote market-based instruments for environmental management (the PRC and Thailand) (Box 16).

Box 15. Integrated Coastal Resources Management Project in the Philippines

The project will support the Government's efforts to manage coastal resources, and will:

(i) develop an institutional framework for integrated coastal resources management to address policy weaknesses and legal gaps, clarify roles of concerned national government agencies and local governments, and address their capacity-building needs;

(ii) assess resources in the coastal zone of participating municipalities, develop and implement integrated coastal resources management plans and participatory law enforcement, and develop eco-certification mechanisms for trade in coral-associated species;

(iii) implement biodiversity conservation in priority marine biodiversity corridors supported by focused research on critical ecosystems and threatened species;

(iv) help municipal fisherfolk develop sustainable enterprises and livelihoods, reducing their reliance on fishing; and

(v) improve water supply, sanitation, and solid waste management, provide add-on classrooms to existing schools for disadvantaged coastal communities, provide infrastructure and facilities for mitigating coastal erosion and pollution, and support an information, education, and communication program on the link between population and environmental quality and population management.

The project will be implemented in six priority marine biodiversity corridors and ecosystems covering 68 municipalities in the provinces of Cagayan, Cebu, Davao Oriental, Masbate, Siquijor, and Zambales.

Source: ADB. 2007. *Integrated Coastal Resources Management Project.* Manila. (Loan 2311, approved in 2007, for $33.8 million)

Policy dialogue. ADB continued to engage in policy dialogue on environmental issues with government agencies through various avenues, such as in the preparation of CEAs and CPSs, processing and implementation of loans, and formulation and implementation of TA projects. For example, ADB pursued discussions with the national environmental and power agencies of Viet Nam to enhance the social and environmental sustainability of its power generation expansion program. A sectorwide environmental and social assessment of the investment program has been initiated for Viet Nam's 2006–2015 lending portfolio. Through technical assistance, ADB also engaged in (i) policy dialogue with government agencies on the use of market-based instruments for water pollution control in the PRC and pollution taxation in Thailand; (ii) the establishment of the Clean Development Mechanism Fund in the PRC; (iii) the introduction of integrated pesticide management in Central Asian countries; (iv) the management of hazardous wastes in Bangladesh, Bhutan, and Nepal; and (v) the mitigation of transboundary air pollution from coal-fired power plants in Northeast Asia.

Environmental safeguard capacity. ADB's capacity development efforts continued where its assistance was needed and where opportunities existed. ADB recognizes that weak institutional capacity continues to be a crucial constraint to environmentally sustainable development in Asia and the Pacific. At the project level, ADB's environmental and safeguard capacity development efforts were undertaken in different ways: (i) as components of loan projects and as the focus of stand-alone technical assistance in various sectors or themes; (ii) through engagement

Box 16. Capacity Building for Environment and Natural Resources in Thailand

The technical assistance project will reduce pollution in key sectors such as energy, industry, wastewater, solid waste, transport, and tourism. It will also promote sustainable use of natural resources, such as water, land, forest, coastal resources, and mineral resources by applying appropriate user fees. The TA will increase government tax revenues, part of which will be earmarked for investment in environmental improvements in selected sectors on a priority basis.

An enabling legal and enforcement framework for implementing a pollution taxation policy will be developed to enhance the overall condition of the environment and ensure sustainable use of natural resources for further economic development in Thailand. It will also resolve the issue of decentralizing administrative responsibilities from central to provincial authorities, with respect to pollution taxation. The technical assistance will rationalize and harmonize existing legal instruments, which are scattered among a number of government agencies, to ensure effective implementation of the pollution taxation policy in Thailand.

Source: ADB. 2005. *Capacity Building for Pollution Taxation and Resource Mobilization for Environment and Natural Resources in Thailand.* Manila. (TA 4667-THA, approved in 30 October 2005 for $225,000)

with government agencies in the preparation of environmental assessment reports; (iii) through specific capability-building programs included in a project's environmental management plan, or in implementing environmental assessment and review frameworks that guide safeguard implementation of multitranche financing facility subprojects; and (iv) through ADB briefings to government officials during field visits. A regional technical assistance project is helping improve the implementation of environmental safeguards for ADB projects in Central and West Asia.

ADB continued to help countries build capacity for environmental impact assessment. It also supported the strengthening of national environmental protection agencies in a number of countries: Bhutan, Cambodia, Cook Islands, India, Kazakhstan, Kyrgyz Republic, Lao PDR, Nepal, Pakistan, PRC, Tajikistan, Thailand, and Timor-Leste. An example of ADB's assistance in this area is highlighted in Box 17.

ADB's assistance focused not only on national environmental protection agencies, but also included capacity building and strengthening of the environment cell of sector agencies, such as the energy agency in India, Pakistan, and Thailand; transport in the Lao PDR; forestry in Viet Nam; industry in Pakistan; agriculture and water in the PRC; and water supply, wastewater, and sanitation in Azerbaijan, Fiji Islands, Papua New Guinea, the PRC, Sri Lanka, and Thailand. ADB also approved TA projects in Viet Nam to strengthen the country's capacity for strategic environmental assessment, and to implement an environmental management plan for a hydropower project (Box 18).

Country safeguard systems. ADB recognizes that DMCs have developed their own systems for delivering safeguards in varying degrees, and that supporting DMCs' efforts to strengthen and use their own systems would enhance country ownership, reduce transaction costs, and extend development impacts. A proposal for the possible use of country safeguard systems (CSSs) in ADB-financed projects is included in the draft safeguard policy statement (SPS). ADB, however, would need to ensure that application of CSSs in ADB projects will not undermine the achievement of ADB's policy principles. This assurance can only be obtained after ADB's assessment of the "equivalence" of CSSs to ADB's policy principles, and after assessment of the country's implementation capacity. To help ADB develop an approach and methodology to assess country safeguard systems, it is conducting assessments of CSSs covering three safeguard policy areas—environment, involuntary resettlement, and Indigenous Peoples—

Box 17. Strengthening Environmental Sector Capacity in Bhutan

The technical assistance project will contribute to Bhutan's sustainable development in line with the 1990 Paro Declaration, and the 5-year plans that followed. It is expected to establish an enabling environment for improving the adoption and implementation of the Environmental Assessment Act of 2000 and its regulations through delivery of (i) an updated environmental assessment (EA) process manual; (ii) six updated EA sector guidelines; (iii) EA sector guidelines on tourism and urban development, and applicable environmental codes of practice; (iv) updated environmental standards; and (v) disseminated outputs to promote private sector development in using the EA sector guidelines, environmental codes of practice, and environmental standards.

Source: ADB. 2003. *Strengthening Environmental Sector Capacity*. Manila. (TA 4120-BHU, approved in 27 May 2003 for $150,000)

Box 18. Strategic Environmental Assessment of the Hydropower Sector in Viet Nam

The technical assistance will build the capacity of relevant Vietnamese agencies—chiefly, the Ministry of Natural Resources and Environment and Electricity of Viet Nam and its related agencies—to enhance their performance in strategic environmental assessment preparation, review, approval, and implementation. It will ensure that the capacity building is sustainable so that future projects and development programs may benefit from the accumulated experience of the Ministry of Electricity of Viet Nam and share the lessons learned with other development partners, including aid agencies, civil society, and non-governmental organizations.

The overall purpose is to support a long-term hydropower development scheme that is sustainable, environmentally sound, and sensitive to the overall impact and risks. The TA complements the proposed TA for the implementation of an environmental management plan for the Song La Hydropower project. It will, among others, (i) gauge the need for capacity for cumulative impact assessment and strategic environmental assessment; (ii) build capacity through on-the-job training and study tours; (iii) synthesize understanding of the methods, coverage, and directions of the pilot cumulative impact assessments and strategic environmental assessments through the collection and analysis of such practices in the hydropower sector; and (iv) pilot similar assessment studies for targeted areas and projects.

Source: ADB. 2005. *Capacity Building in the Strategic Environmental Assessment of the Hydropower Project.* Manila. (TA 4713-VIE, approved in 9 December 2005 for $475,000)

in five countries: the PRC, India, Kyrgyz Republic, the Philippines, and Viet Nam.[19]

With respect to CSS assessments, initial findings indicate that there is closer convergence between ADB's safeguard policy principles and the case study countries' safeguard systems on environment, compared with CSSs on involuntary resettlement, and even less so with CSSs on Indigenous Peoples. With respect to implementation capacity, gaps are evident and vary across all five countries. To support ADB's commitment to assist its DMCs strengthen their CSSs, a dedicated safeguard capacity development fund to strengthen safeguard capacity is included in the draft SPS.

Environmental capacity. ADB's capacity building efforts also focused on the brown environment agenda (energy conservation, energy efficiency, biomass power generation, coal mine safety, air quality management, hazardous wastes management, and integrated management of persistent organic pollutants, specifically pesticides); the green agenda (integrated ecosystem management); and the blue agenda (integrated water resource management for flood control, water resources management, and integrated land use planning and management). ADB's assistance also covered the development of economic instruments for environmental management and pollution control, as cited earlier.

[19] ADB. 2005. *Strengthening Country Safeguard Systems*. Manila. (TA:6285-REG).

Integrating Environmental Safeguards into ADB Operations

ADB integrates environmental safeguards in its projects to avoid, minimize, or mitigate adverse environmental impacts. ADB's environmental safeguard calls for a structured process of impact assessment, planning, and mitigation to address the adverse effects of projects throughout the project cycle. Impacts are identified and assessed early in the project cycle; plans to avoid, minimize, mitigate, or compensate for the potential adverse impacts are developed and implemented; and affected people are informed and consulted during project preparation and implementation. ADB's approach to mainstreaming environmental safeguards in projects is described below.

The environmental assessment process. The environmental assessment process begins at the early stage of the project cycle, i.e., from project identification, preparation, appraisal, loan negotiations, implementation, completion, and post-evaluation. The process involves the identification and assessment of impacts, the formulation of mitigation measures and their implementation, supervision, monitoring, and reporting of outcomes throughout the project cycle. Based on the project environment category, borrowers or clients prepare initial environmental examination or environmental impact assessment reports, including an environmental management plan. Borrowers or clients disclose information and consult with potentially affected people and local NGOs whose concerns are addressed in environmental assessment reports. ADB reviews these reports to help ensure that adverse impacts are minimized, mitigated, or compensated. ADB also ensures that a budget for an environmental management plan and a timetable for its implementation are included in the environmental assessment report and project document. The borrower supervises the implementation of the environmental management plan. ADB conducts annual reviews to ensure project compliance with its requirements, and reviews monitoring reports to ensure timely implementation of corrective measures, if needed.

To facilitate compliance with the *Environment Policy* (2002), project teams are provided with instructions on safeguard requirements, rapid environmental assessment checklists, and environmental assessment guidelines; these are available on ADB's website. Safeguard training programs are conducted at least three times a year and, since 2003, have benefited more than 450 staff members from headquarters and resident missions. During these training sessions, project teams are made aware of their duties and obligations in formulating, processing, and implementing ADB-assisted projects.

Project classification. At the earliest stage of the project cycle, projects are classified according to the significance of their adverse environmental impacts. The operations department proposes a classification for each project, which is approved by the chief compliance officer in the Regional and Sustainable Development Department.

Of the 468 projects approved from 2003 to 2008, 15% were categorized as A, 42% as B, 27% as C, and 16% as FI (Table 2.1 and Figure 2.11).[20] Recently, there has been a notable increase in the number of category A projects (Figure 2.12). It has also been observed that three out five ADB projects require environmental assessment reports and/or frameworks.

[20] The categories are defined as follows: category A, projects with potential for significant adverse environmental impacts; category B, projects with potential for some adverse environmental impacts, but of lesser degree or significance than those in category A; category C, projects unlikely to have adverse environmental impacts; and category FI, projects that involve a credit line through a financial intermediary or an equity investment in a financial intermediary.

Improving the effectiveness of ADB safeguard policies. Taking into account the recommendations of the 2006 special evaluation study by the Operations Evaluation Department, ADB initiated a safeguard policy update to improve the safeguard policies' clarity, coherence, and consistency; balance the current front-loaded procedural approach with one focused more on achieving results during project implementation; tailor safeguard procedures to better match different lending modalities, clients, and capacities in DMCs; identify improvements in resource allocation and internal processes; and, formulate a consolidated safeguard policy statement. Extensive internal and external consultations were conducted within and outside the region involving 415 people from 41 ADB member countries and representing ADB staff, governments, non-governmental organizations, Indigenous Peoples organizations, private sector, academe, and other international development agencies.

On 20 July 2009, ADB's Board of Directors approved its new Safeguard Policy Statement (SPS). The SPS which becomes effective on 20 January 2010 provides a consolidated policy on the environment, involuntary resettlement and Indigenous Peoples. It clarifies ambiguities relating to policy scope and triggers, and contains clear policy principles and requirements for environmental and social assessment in each of the safeguard policy area: environment, involuntary resettlement and Indigenous Peoples. The new SPS also clarifies the environmental safeguard requirements for biodiversity conservation, pollution prevention and abatements, community and occupational health and safety, and physical cultural resources. The policy clearly delineates the roles of ADB and borrowers, and will strengthen safeguard implementation by enhanced supervision. It also requires independent monitoring of highly complex and sensitive projects. The SPS also fills policy gaps for financial intermediation projects

Table 2.1 Environment Categories of Projects (2003 - 2008)

	Category				
Year	A	B	C	FI	Total
2003	9	41	15	3	**68**
2004	7	24	20	12	**63**
2005	13	38	16	17	**84**
2006	9	30	26	16	**81**
2007	15	30	22	19	**86**
2008	16	35	26	9	**86**
Total	**69**	**198**	**125**	**76**	**468**

Source: Asian Development Bank.

Fig. 2.11: Distribution of Projects by Environment Category (2003–2008)

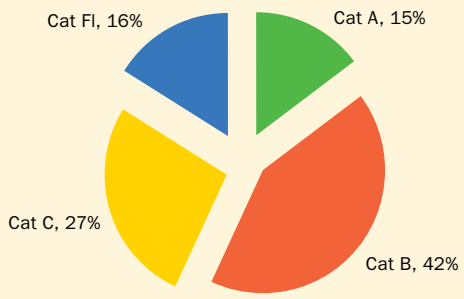
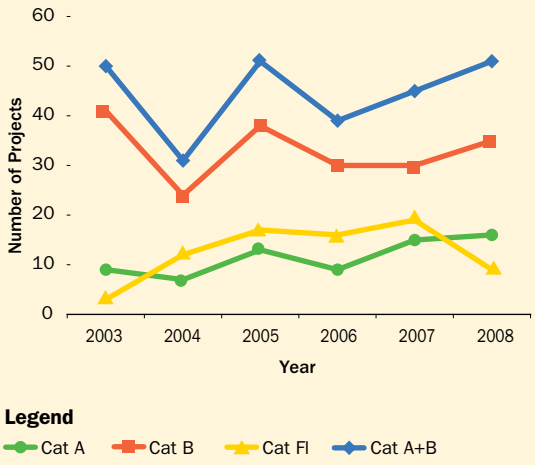


Fig. 2.12: Environmental Categories of Projects (2003–2008)



and formalizes the application of framework approaches for sector projects, multitranche financing facilities, and non-sensitive components of projects.

A very important feature of the policy is the strong emphasis on capacity development in DMCs to manage environmental and social impacts and risks. As a path-breaking step towards implementation of the Paris Declaration and Accra Agenda for Action, the policy introduces provisions to strengthen and apply country safeguard systems for ADB projects, subject to meeting conditions of equivalence and acceptability.

Chapter 3
Initiatives and Partnerships

Some environmental challenges confronting DMCs transcend national borders, and are best addressed through subregional or regional initiatives. This chapter describes ADB's subregional work, as well as the thematic initiatives that supplement it. This chapter also highlights ADB's partnerships with other development agencies. Partnerships enable ADB to maximize the impact of its own efforts and encourage DMCs to address issues of regional and global importance that might receive low priority if viewed purely from a national perspective.

Thematic Initiatives

ADB has embarked on several thematic initiatives or programs to address the key environmental problems in the region. The objectives, activities, and updates on the Climate Change Program, Poverty and Environment Program, Clean Air Initiative for Asian Cities, Sustainable Transport Initiative, and Water Financing Program are discussed.

The ADB Climate Change Program

ADB is taking an active role in Asia and the Pacific to help address the causes and consequences of climate change, while ensuring continued economic growth and poverty reduction. ADB is increasing support by mainstreaming climate change considerations into its operations, mobilizing finance, and building capacity and facilitating knowledge transfer. ADB established its Climate Change Fund to support both mitigation and adaptation activities. It also established the Future Carbon Fund. It works with partners such as the GEF to help its DMCs access grant resources for adaptation and mitigation programs and investments.

Mainstreaming climate change in ADB operations requires that climate change be considered during country programming, and climate change mitigation and adaptation

Box 19. ADB's Climate Change Fund

On 6 May 2008, ADB established the Climate Change Fund (CCF) to facilitate greater investments in developing member countries (DMCs) to effectively address the causes and consequences of climate change.

The CCF will be a key mechanism for pooling resources within ADB to address climate change through technical assistance, and through grant components of investment projects. The fund has an initial allocation of $40 million, and will be made available for clean energy development, land use, Reduced Emissions from Deforestation and Degradation, improved land use management, and adaptation.

measures are included in the country partnership strategy and other program documents. In the preparation of the Climate Change Implementation Plan (CCIP), ADB looks at the key sectors and activities that generate emissions of greenhouse gases, and identifies opportunities for mitigating climate change, as well as adaptation measures needed to help DMCs address its impacts and improve the resilience of vulnerable communities.

Mitigating the impacts of Climate Change

Most of the historical buildup of greenhouse gases in the atmosphere is the result of emissions from developed countries. However, while developing countries in Asia are still low greenhouse gas emitters in per capita terms, they are now the fastest growing source of new emissions. Without increased and urgent greenhouse gas mitigation action in the region, reduction in global greenhouse gas emissions at the level necessary to prevent dangerous climate change will not be possible. To mitigate climate change, ADB is addressing the main causes of emissions in the region through several initiatives. ADB will help DMCs move their economies onto low-carbon growth paths by improving energy efficiency, expanding the use of clean energy sources, promoting improved urban sanitation and reduction of fugitive methane emissions, enabling sustainable transport policies and applying efficient systems, and promoting sustainable land use and forestry.

Energy efficiency and clean energy. The power sector is a major contributor to greenhouse gas emissions, and future electricity supply will need to shift from reliance on traditional fossil fuel to renewable energy. ADB will help scale up efforts to promote energy efficiency and the use of clean energy sources, including near-zero-carbon options such as wind energy and low-carbon fuels such as natural gas. ADB promotes this through its policy dialogue with DMC governments and by establishing and strengthening financing schemes that are attractive to its DMC clients. Through the CEFPF, ADB provides concessional resources and guaranteeing services to boost energy efficiency and clean energy investments.

Sustainable transport. Estimates indicate that the transport sector is the fastest growing source of greenhouse gas emissions in Asia. Through its Sustainable Transport Initiative, ADB is geared to realign its investments in the sector, placing them on a more sustainable footing to reduce greenhouse gas emissions while addressing concerns over local air quality, congestion, and safety.

Climate change mitigation in urban areas. ADB supports investments to reduce greenhouse gas emissions from transport, residential and commercial buildings, industry, and waste management. Many investments to mitigate greenhouse gas emissions from these sources also offer strong potential for so-called co-benefits—including generating other environmental and social gains through reduced local air pollution, traffic congestion, and better waste management, among others.

Forestry and other land use. The region's high emissions from this source are consequences of land use changes associated with rapid urbanization and continuing deforestation, especially the ongoing loss of the last remaining rainforests of Asia. Farming practices that involve the heavy use of chemical fertilizers emit significant amounts of nitrous oxide, a powerful greenhouse gas with approximately 310 times the warming impact of CO_2. ADB will help its DMCs cope with this important source of greenhouse gas emissions, exploring possibilities for reduced emissions from deforestation and degradation.

Access to carbon markets. ADB will help its DMCs tap carbon markets to obtain additional resources needed for implementing clean

energy and other greenhouse gas mitigation projects that qualify under the CDM, a flexible trading mechanism established by the Kyoto Protocol. ADB's CMI has created a mechanism with the Asia-Pacific Carbon Fund and Future Carbon Fund to convert this added cash flow into resources for project cofinancing for credits until 2020. This holds significant implications for investment, since a typical wind or hydropower project will continue to generate emission reductions well beyond 2012, and the combination of the existing Asia-Pacific Carbon Fund and proposed Future Carbon Fund could provide between 20% and 40% of total project cost.

Private sector investments to address climate change. ADB will help DMCs create an investment environment conducive to private investment in clean energy, energy efficiency, sustainable transport, or improved land use. This would build on the strong history of ADB technical assistance support for developing capital markets in DMCs and institutional and regulatory reform, but this skill set would be focused specifically on targeted DMCs to enhance private investment for climate change mitigation.

Adapting to Climate Change

ADB will help DMCs adapt to the unavoidable impacts of climate change by addressing vulnerability risks in national development strategies and actions, increasing the climate change resilience of vulnerable sectors such as water and agriculture, climate-proofing projects, and addressing the social dimensions of climate change. In 2008, ADB scaled up its climate adaptation portfolio to address climate vulnerability and risks in national development strategies and action plans, assess climate resilience in vulnerable sectors and geo-climatic regions, incorporate adaptation actions into ADB country partnership strategies through CCIPs, and address the social dimensions of climate impacts in ADB operations. In addition, ADB has financed several innovative adaptation initiatives, including development of vulnerability and risk reduction projects in 15 DMCs under ADB's internal Climate Change Fund and other climate change adaptation activities (Box 20).

Box 20. Activities Funded Under the Small Grants to Promote Adaptation

- Enabling ADB's Climate Change Interventions in Central and West Asia
- Climate Risk Management Assessment for Agriculture in Thailand and Viet Nam
- Study on Climate Impact Adaptation and Mitigation in Asian Coastal Mega Cities, Ho Chi Minh City in Viet Nam
- Glacial Melt and Downstream Impacts on Indus-Dependent Water Resources and Energy in Afghanistan and India
- Strengthening Climate Change Resilience in the Integrated Natural Resources and Environmental Management Sector Development Program in the Philippines
- Protecting Island Biodiversity and Traditional Culture in Pacific Island Communities through Community-based Climate Risk Assessment in Cook Islands

Support to address climate change vulnerabilities. There is growing demand among ADB's DMCs for national assessments of climate change vulnerabilities and adaptation responses. Planning is being strengthened through better analysis of climate change consequences at the national and local levels and identification of cost-effective measures to improve the resilience of infrastructure and vulnerable populations to adverse impacts.

Increasing climate resilience of vulnerable sectors. ADB is supporting increased investment in defensive measures to reduce climate change risks in sectors that are considered especially vulnerable. Areas covered include:

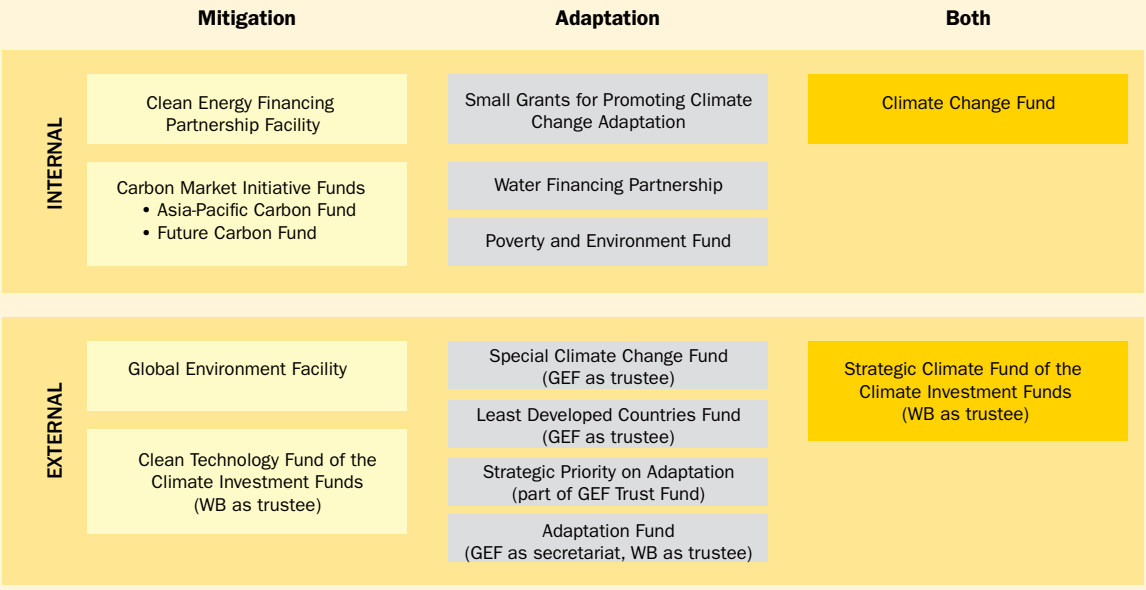
Agriculture. Under a technical assistance initiative, ADB is studying climate variability and its impact on cropping patterns, structures of income and employment, and adaptation coping strategies of the rural poor and most vulnerable farmers in semi-arid tropic villages of Bangladesh, the PRC, India, Pakistan, and Sri Lanka.

Water resources management. ADB is helping countries under the CACILM adapt to future climatic conditions through the development of adaptation measures that include drought resistant crops, improvements in irrigation efficiency, water resource management, rehabilitation of degraded forests and pasture lands, and watershed protection.

Urban development. ADB is working with the World Bank and Japan International Cooperation Agency on an assessment of climate change risks and their costs in four coastal Asian mega cities—Bangkok, Ho Chi Minh City, Kolkata, and Manila.

Climate-proofing projects. ADB aims to ensure that projects and programs take account of predicted changes in rainfall patterns, the severity and frequency of storms, accelerated glacial melting, sea-level rise, and other impacts. New projects for climate proofing are a high priority. For example, ADB is working with the United Nations Development Programme (UNDP) to climate-proof a coastal infrastructure project in central Viet Nam, with support from the Special Climate Change Fund administered by the GEF. With extreme events and climate variability expected to intensify and become more frequent, ADB is developing a screening tool to screen projects against anticipated climate impacts and minimize vulnerability and risk to the investments of ADB and its partners. The Climate Framework Integrating Risk Screening Tool (Climate-FIRST) is a rapid assessment tool for climate-induced impacts and associated risk at the project preparation stage. It provides a snapshot of project risks, and helps identify risk reduction measures in project design and operations.

Fig. 3.1: Climate Change-Related Funds



Addressing the social dimensions of climate change. Climate change actions, particularly for adaptation, are fundamentally about helping people cope with increased threats to their livelihoods and well-being. To strengthen regional knowledge, ADB is undertaking a regional study for climate change migration, which includes a review of climate-induced migration risks in Asia and the Pacific; analysis of migration policy options; and suggestions on how to address policy, institutional, infrastructure, and financing aspects of migration.

Disseminating knowledge on climate change. Two major knowledge products on climate change have recently been released. The *Regional Review of the Economics of Climate Change in Southeast Asia*,[21] undertaken with support from the Department of International Development of the United Kingdom and in cooperation with the global Stern Review team, was recently launched. The study examines the economic costs and climate change mitigation and adaptation options facing the economies of Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam. Another new knowledge product, *Under the Weather and the Rising Tide: Adapting to a Changing Climate in Asia and the Pacific*,[22] describes adaptation strategies and actions being pursued by ADB, its country partners, and the international community, and presents several important adaptation considerations for DMCs. Also highlighted are emerging trends in climate adaptation strategies, including the blending of mitigation and adaptation, disaster risk management and climate adaptation synergies, community adaptation tools, and applied downscaled modeling.

Facilitating access to funds. Several internal and external funds have been established to support initiatives to mitigate and adapt to the effects of climate change. Figure 3.1 clearly depicts these various funds.

The Poverty and Environment Program

Through the Poverty and Environment Program, knowledge is captured and disseminated by synthesizing the lessons learned from its funded subprojects, as well as similar projects by other development organizations. Environment mainstreaming is strengthened through technical support provided to ADB's regional departments and resident missions. The program is funded by the PEF, which includes $5.0 million from Norway and $3.2 million from Sweden. Two regional technical assistance projects have been undertaken under the Poverty and Environment Program.

In the first regional TA project, a total of 15 subprojects have been completed. A video film documentary and a compendium report on the lessons learned, depicting how the communities and governments address poverty-environment challenges, were completed early in 2009.

The second regional TA project, approved in November 2007, expands the PEF activities by financing additional subprojects, including pilot intervention and analytical studies and building the environment capacities of six resident missions (Bangladesh, PRC, Lao PDR, Mongolia, Pakistan, and Viet Nam) and DMCs through the hiring of national environment specialists. It will also support upstream environment mainstreaming through country environment analysis in country partnerships and strategies, knowledge capture and dissemination, policy advice, sector studies, training, and institutional support activities.

The Poverty and Environment Partnership. To improve the coordination of work on poverty reduction and the environment within

[21] ADB. 2009. *The Economics of Climate Change in Southeast Asia: A Regional Review.* Manila.

[22] ADB. 2009. *Under the Weather and theRising Tide: Adapting to a Changing Climate in the Asia and the Pacific.* Manila.

the framework of internationally agreed principles and processes for sustainable development, ADB joined the Poverty and Environment Partnership, an informal network of development agencies established in September 2001. To support the partnership, ADB has established a poverty environment website (www.povertyenvironment.net) in a neutral domain to pool and present poverty-environment efforts globally. The website aims to collect and share knowledge and experience on poverty-environment links and good practices in responding to poverty-environment challenges, as well as to foster exchange and collaboration among poverty-environment stakeholders from Asia and other parts of the world.

In 2008, ADB hosted the Poverty Environment Partnership meeting, which shared innovative cases and experiences related to tools and projects with the dual objectives of reducing poverty and protecting the environment.

The Clean Air Initiative for Asian Cities

ADB has been actively pursuing a regional approach towards a more pronounced improvement in air quality levels throughout Asian cities by assisting DMCs build their capacities for air quality management at all levels of development planning, decision making, and investment. ADB provides support through a TA project, Rolling Out Air Quality Management in Asia, with the Clean Air Initiative for Asian Cities (CAI-Asia) Center (Box 21) as the implementing agency. The center aims to share innovation and facilitate collaboration on air quality management activities. The Better Air Quality (BAQ) Workshop, the largest gathering of policy makers and stakeholders dedicated to improving air quality management, is organized every 2 years, and ADB has sponsored BAQ since 2002. The theme of the 2008 BAQ workshop was air quality and climate change.

With the accelerated impact of climate change, ADB has moved to promote a better focus on cleaning the air by supporting sustainable urban transport to address not only air pollution as it affects public health but also greenhouse gases as they contribute to climate change. This co-benefits approach is expected to produce local and global benefits at the same time. Pilot projects targeting co-benefits include the Bus Rapid Transit system in Ahmedabad, Indore, and Pune, and bikeways in Pune and Nanded in India. These projects inspired by co-benefits are being shaped by the results of knowledge exchange, capacity building, policy development, and networking. By capturing and transferring air quality management knowledge, which is at the core of another TA project, ADB aims to expand the multiplier effects of this co-benefits approach to other sectors such as energy and urban development.

CAI-Asia Partnership. Building on CAI-Asia's strong foundation of networking for improved AQM is the CAI-Asia Partnership, which acts as a multisector forum on urban air quality where partners from different sectors can meet, exchange experiences, and engage in dialogue to promote better urban AQM in Asian cities. This is done by (i) encouraging the development and adoption of sound science as the basis of urban AQM; (ii) stimulating the development and implementation of policies, programs, and projects on urban air quality; (iii) reviewing progress in urban AQM in Asia, and outlining future priorities for urban AQM; and (iv) fostering cooperation and coordination with other regional programs and initiatives on urban AQM in Asia.

The CAI-Asia Partnership is a voluntary, informal partnership and self-governing body with a broad-based, multistakeholder composition that spans the three main subregions of Asia—East Asia, Southeast

Box 21. Clean Air Initiative for Asian Cities (CAI-Asia)

CAI-Asia, established in 2001, is a joint initiative of the ADB, the World Bank, and the former US-Asia Environmental Partnership to promote and demonstrate innovative ways to improve the air quality of Asian cities by sharing experiences and building partnerships. The multistakeholder initiative was formalized in 2007 with three components:

- The CAI-Asia Partnership, with over 120 members, registered as a United Nations Type II partnership;
- The CAI-Asia Center, a nonprofit organization based in Manila, and the secretariat to the CAI-Asia Partnership; and
- CAI-Asia Local Networks in the PRC, Indonesia, Pakistan, the Philippines, Nepal, Sri Lanka, and Viet Nam. Another network in India is set to be established in 2009.

CAI-Asia focuses its work on four pillars: (i) knowledge management, (ii) capacity building, (iii) policy development and networking, and (iv) investment and implementation of projects and programs. For more information, please visit www.cleanairnet.org/caiasia.

Asia, and South Asia. The partnership approach brings together stakeholders from local and national governments, academia, civil society, and the business sector with an interest in improving air quality in Asia's urban areas. In addition to these local stakeholders, members also include international development agencies, NGOs, and private sector entities interested in assisting cities in Asia to improve air quality.

CAI-Asia Center. The CAI-Asia Center's mission is to promote improved air quality in Asian cities by sharing knowledge and experiences, building partnerships, and piloting innovative approaches. The vision, which the center will help achieve over the next 5–10 years, requires that

(i) awareness among stakeholders on urban AQM in Asia is greatly improved;
(ii) ambient air quality standards, emission standards, and well-articulated AQM policies are formulated, increasingly adopted, and successfully implemented;
(iii) a well-established capacity to manage urban air quality in Asia—which includes trained human resources, availability of monitoring equipment, and provision of adequate operational budget—is developed; and
(iv) financing models for urban AQM in Asia are developed and adequate financial resources are mobilized to sustain sound urban AQM in Asia.

ADB provides support to the CAI-Asia Center and the CAI-Asia Partnership to carry on work initiated under its previous TA project activities. In 2008, it supported the Clean Air Initiative for Asian Cities' biennial workshop which had air quality and climate change as its theme. It also assisted in the center's initiative to capture and transfer AQM knowledge in Asia. ADB encourages the CAI-Asia Center to continue seeking additional support from a range of other development organizations and international foundations, as well as from the business sector.

The Sustainable Transport Initiative

Over the past three decades, CO_2 emissions from transport have risen faster than those from other sectors, with the greatest increases seen in Asia's cities. Projections of future urban transport emissions are not encouraging, and climate change impacts must now be considered an integral aspect of transport policy and projects, particularly in urban transport.

Established in 2006, the objective of the Sustainable Transport Initiative is to develop a

pipeline of sustainable transport initiatives and projects that will link sustainable transport to effective environmental management, energy efficiency, and inclusive social development. Under this initiative, case studies for five cities (Changzhou, Colombo, Dhaka, Harbin, and Kathmandu) identified key constraints and elements required for sustainable urban transport systems in the cities.

A regional strategic development framework for sustainable transport that defines a new paradigm for urban transport development and "rules of engagement" for sustainable transport solutions and services was also prepared under another TA project. Another project will assist in developing pilot clean and energy efficient urban transport projects in selected cities and support ADB's lead role among international financing institutions for transport and climate change.

To support the broader agenda of climate change, two studies on the transport sector and climate change have been commissioned. The studies focus on the policy implications of low-carbon transport, and transport sector greenhouse gas contributions and post-Kyoto agreements. In addition, a series of papers is being prepared to explore how the sector can respond to the growth in CO_2 emissions. The work will be used to support ADB's ongoing involvement in climate change and clean energy, and elevate the transport sector within this context.

The Cities Development Initiative for Asia

Under ADB's Strategy 2020, livable, competitive, and environmentally attractive cities are a key focus. The Cities Development Initiative for Asia (CDIA) was established in 2007 to assist Asian cities in bridging the gaps in institutional capacity for planning investments and for structuring their financing related to urban infrastructure. The long-term aim of the CDIA is to contribute to the promotion of sustainable and equitable urban development, leading to improved environmental and living conditions for all in Asian cities.

The initiative supports identification and prestructuring of appropriate projects and building management capacity of medium-sized cities, with focus on cities with populations of approximately 0.25 million–5.00 million people. In these cities, the CDIA supports the implementation of existing city development strategies or comprehensive development plans for socially, economically, and environmentally equitable and sustainable infrastructure and urban services.

The CDIA uses a demand-driven approach to support the identification and development of urban investment projects in the framework of existing city development plans that emphasize one or more of the following impact areas: urban environment improvement, urban poverty reduction, and climate change mitigation or adaptation. The CDIA has received several applications, and has started work in several countries. Major emerging client countries include the PRC, India, and Indonesia—the countries with the greatest greenhouse gas impact. In addition, activities have begun in the Lao PDR, Nepal, Viet Nam, and other countries likely to be heavily impacted by climate change.

The Water Financing Program

ADB adopted its Water for All policy in January 2001. The policy promotes a national focus on water sector reform, fostering the integrated management of water resources, and improving and expanding the delivery of water services. To meet the burgeoning water needs in Asia and the Pacific, ADB formulated the Water Financing Program, which seeks to make water a core investment area for ADB.

The Water Financing Program (2006–2010) is encouraging integrated water resources management approaches through demonstrations and TA in three "streams": urban, rural, and basin. All efforts are driven by three principles relating to water's place and importance: (i) it is an integral part of the ecosystem, (ii) it is a critical natural resource and a socially vital economic good, and (iii) it needs to be managed in an integrated and holistic manner to ensure its efficient and sustainable use.

The plan is to more than double ADB's annual water sector investments over 2006–2010, from $1 billion to $2 billion. Two outcome targets have been adopted: to improve water services for 200 million people in both cities and rural areas, and to help introduce integrated water resources management in 25 river basins across Asia and the Pacific.

Subregional Initiatives

ADB continues to pursue several subregional initiatives or programs to (i) mainstream environmental considerations into the subregion's economic program; and (ii) to restore, maintain, and enhance the productive functions of the natural resources for the improved economic and social well-being of those who depend on these resources, while preserving ecological functions. Key initiatives and programs described below include the GMS Core Environment Program (CEP), the promotion of sound environmental management in the Brunei Darussalam, Indonesia, Malaysia, and Philippines East ASEAN Growth Area (BIMP-EAGA), the Coral Triangle Initiative, the strengthening of coastal and marine resources management in the Coral Triangle of the Pacific, and the Central Asian Countries Initiative for Land Management.

The Greater Mekong Subregion Core Environment Program

The Greater Mekong Subregion (GMS) Core Environment Program (CEP) and its flagship Biodiversity Conservation Corridor Initiative aim to mainstream environmental considerations into the GMS Economic Cooperation Program. The CEP positively influences its strategies and choice of investments, as well as synergizes poverty reduction and biodiversity conservation. The GMS CEP is also an innovative approach to mainstreaming the environment in the national development processes. Tools for mainstreaming include strategic environmental assessments and multicriteria analysis. While there is room for improved strategic environmental focus in other subregional programs, ADB's positive influence in national programs is evident as discussed below.

The GMS CEP has been developed as a joint initiative of GMS member countries, and was endorsed by the GMS Summit in July 2005. Its project implementation office is the Environment Operations Center, which is administered through ADB's Thailand Resident Mission. The work that CEP carries out is governed by the Working Group on Environment, consisting of environment ministry focal points from each of the six countries, who meet twice a year to monitor and guide the strategic direction of the work. Other government stakeholders include the ministries of energy, transport, industry, trade, and agriculture. The CEP has a number of strategic partnerships with conservation and environment organizations such as Flora and Fauna International, World Wide Fund for Nature (WWF), Mekong River Commission, and Wildlife Alliance, and collaborates with development agencies such as UNDP, UNEP, World Bank, and the United States Agency for International Development (USAID).

CEP activities are focused on three strategic areas of work that all aim to strengthen environment in the sustainable development of the GMS.

The CEP applies strategic environmental assessment in the sector programs of GMS countries. In Viet Nam, the strategic environmental assessment was applied in 2008 for the hydropower master plan in Viet Nam (as part of the Power Development Plan VI) of the Ministry of Industry and Trade. This tool is improving the methodological and analytical capacities of sector institutions for scenario analysis and risk and mitigation assessment based on economic valuation whenever possible. Strategic environmental assessment is also being applied for the tourism sector in Cambodia under the Ministry of Tourism and Ministry of Environment, and to the transport sectors' North–South Economic Corridor from Kunming in the Yunnan Province of the PRC to Bangkok in Thailand. Spatial multicriteria approaches are used in the transformation of the transport corridor into a fully fledged economic corridor in terms of clustering, phasing, sequencing, and the development of various sector investment profiles. Specific mitigation and enhancement measures have been proposed.

The Biodiversity Conservation Corridor Initiative, the flagship component of the CEP, has established six pilot sites (two in Cambodia, one in Thailand, one in the Lao PDR, one in Viet Nam, and one in Yunnan Province and the Guangxi Zhuang Autonomous Region of the PRC) through a collaborative effort with the GMS governments. Cash-based incentives extended to local communities, along with capacity development in natural resources management, conservation, and reforestation, are strengthening awareness of the value of the biodiversity landscapes that the GMS countries share. ADB's support in this regard resulted in the endorsement of the Law on Biodiversity in Viet Nam by the National Assembly in November 2008. The law will take effect on 1 July 2009.

The CEP is supporting GMS countries in the routine conduct of environmental performance assessments and reporting. Technical resource materials have been prepared and disseminated, and capacity is being developed through subnational, national, and regional training activities. The CEP is also supporting country initiatives to mainstream and institutionalize environmental performance assessments and sustainable development planning as part of national socioeconomic development and natural resource management processes. Substantial effort is being devoted to selection of country-specific priority environmental concerns and identification of corresponding indicators, data acquisition, analysis and interpretation, data quality and standardization, and data and information management and sharing protocols. A second round of national environmental performance assessment reports is scheduled for completion by the end of 2009.

ADB's support to the GMS CEP has recently been evaluated by ADB's Independent Evaluation Department. The study confirmed that local ownership and commitment to the GMS CEP has grown, as reflected in the Joint Ministerial Statement of the last Environment Ministers Meeting in early 2008, which placed a high priority on sustainable development and poverty reduction through sound environmental management (Box 22).

ADB will continue to support the subregional cooperation under the aegis of the GMS program which is maturing in its approach, and expanding in application aimed at improving sound environmental outcomes and development effectiveness.

Box 22. Evaluation of the Greater Mekong Subregion (GMS) Program: Findings on the Core Environment Program

ADB's Independent Evaluation Department evaluated the regional cooperation assistance program of ADB's support to the GMS Program. It evaluated ADB-cofinanced GMS operations from 1992 to 2007. The study states that in the environment theme, the institutional assessment is quite positive mainly because of the high degree of local involvement in the program. The early development and implementation of the environmental program was largely in the hands of ADB and nongovernment organization partners. However, as key stakeholders at higher policy levels in member nations gained a better understanding of the Core Environment Program (CEP), their ownership of and commitment to the program grew. This is reflected in the Joint Ministerial Statement of the last Environment Ministers Meeting in early 2008, which placed a high priority on sustainable development and poverty reduction through sound environmental management. The Environment Operations Center, established in 2005 mainly to coordinate and facilitate the timely and effective implementation of the Core Environment Program (CEP) and to provide oversight of program activities implemented by government and nongovernment organization partners, was found to have added significantly to CEP effectiveness.

Source: *Greater Mekong Subregion: Maturing and Moving Forward, a Regional Cooperation Assistance Program Evaluation.* December 2008. http://www.adb.org/Documents/CAPES/REG/CAP-REG-2008-73.pdf

Strengthening Sound Environmental Management in the BIMP-EAGA

Coordinating natural resource management for sustainable development is central to the economic growth in the Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area (BIMP-EAGA) subregion, where production systems are largely based on natural resources. Growth must also be sustainable to drastically reduce the incidence of poverty, which is estimated at 50%. Sustainability rests on better management of the subregion's natural resources, which are among the richest repositories of the earth's biodiversity. The Sulu-Sulawesi Marine Ecoregion, at the center of the Coral Triangle, and the Heart of Borneo are parts of this growth area.

Specifically, issues to be addressed include unsustainable use of natural resources—including deforestation caused by logging, mining, and farm expansion—and diminished fish stocks due to overfishing and use of destructive fishing methods. Global warming is expected to hasten these losses through coral bleaching and ecological disequilibrium. Addressing these issues will require a strategic framework of environmental conservation, capacity development, and sustained financing for resource management in the region.

Approved in 2008, ADB's technical assistance will aid in the preparation of a regional environment program. Activities will include preparing environmental and socioeconomic profiles of BIMP-EAGA countries and identifying (i) common environmental issues and trends, (ii) the impact of socioeconomic activities on environmental degradation, and (iii) the issues that the regional environment program will address, based on which activities will be identified to support the program. Assessments will also be made on the adequacy of policy instruments and institutional capability, including the preparation of an action program built on the principles of efficiency of resource use, equity of access, balance between competing uses, use of environmentally sound technologies, payment for environmental services, and collaboration of stakeholder groups. The study will also include activities to generate government support and forge broad partnerships for action.

Additional funding will be provided by the GEF to support a subproject under the CTI to (i) strengthen the policy and institutional conditions for sustainable management of

fisheries and coastal and marine resources; (ii) increase the resilience of fisheries, coastal and marine resource systems, and marine protected areas; (iii) promote the sustainable financing of marine protected areas, and other coastal and marine resources management measures; and (iv) promote coordination and harmonization of project management.

The Coral Triangle Initiative

ADB serves as the lead GEF agency in organizing the program and mobilizing resources from a range of partners to support conservation, policy development, and institutional strengthening efforts under the CTI (Box 23). The CTI is a regional effort launched in 2007 to preserve and manage the region's marine resources. The GEF Council has pledged grants of up to $65 million for CTI-related projects. ADB is working with the six countries—Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands, and Timor-Leste—as well as the governments of the United States and Australia and the environmental groups World Wide Fund for Nature, The Nature Conservancy, and Conservation International. In October 2008, representatives from the six Southeast Asian and Pacific countries that make up the CTI met in Manila to finalize the Coral Reefs, Fisheries, and Food Security Plan of Action for the Coral Triangle. The plan presents a series of steps to protect and sustain marine life in the triangle, and includes local, national, and regional projects that work towards common objectives agreed upon by the countries. The plan was endorsed by leaders of the participating countries at the Coral Triangle Initiative Summit in Indonesia, held in May 2009 .

ADB initially expects to implement three subprojects under the CTI plan, all of which will receive GEF funding (Box 14).

Box 23. Eco Profile and Risks of the Coral Triangle

The Coral Triangle is the center of the world's coral reef biological diversity, holding more than 75% of the known coral species and more than 3,000 species of reef fish. It covers all or parts of the exclusive economic zones of Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands, and Timor-Leste. It also is home to the world's largest population of commercially important tuna species, supplying 50% of global tuna production valued at over $2 billion annually, and supports a diving and nature-based tourism industry worth over $5 billion annually.

Destructive fishing practices, illegal, unregulated, and unreported fishing across the region, and land-based pollution have caused serious damage to vital ecosystems, with the rising sea level from climate change further threatening these resources in the longer run. This region is facing a grave threat from climate change, which many scientists believe will cause not only sea levels to rise, but also water temperatures and acidity, leading to the bleaching and killing of reefs.

Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific

ADB will assist five Pacific countries, which lie within or border the Coral Triangle, to strengthen management of coastal and marine resources at the local and national levels to prevent environmental degradation, and to achieve both global and local benefits from improved environmental management.

The technical assistance approved in 2008 will cover three CTI countries—Papua New Guinea, Solomon Islands, and Timor-Leste—and include the Fiji Islands and Vanuatu. Profiles of the five countries will be prepared, and will include (i) the environmental and socioeconomic characteristics of the individual countries and the Coral Triangle subregion; (ii) common environmental issues and trends and the impact of socioeconomic activities

on environmental degradation; (iii) gaps in information and data management systems and methods; (iv) watershed conditions and their interface with marine and coastal habitats; (v) threats from land-based activities to coral reefs, near-shore habitats, and associated fisheries; (vi) regional and national climate change impacts on coastal and marine resources; and (vii) other issues that a strategy for strengthened coastal and marine resources management in the subregion must address.

Adequacy of existing legislation, policies, and institutional capacities will also be assessed, and actions to address these gaps identified. The TA will include activities to generate government support and forge broad partnerships for action.

The PRC-GEF Partnership on Land Degradation in Dryland Ecosystems

The PRC–GEF Partnership on Land Degradation in Dryland Ecosystems, initiated in 2002 as a long-term cooperation agreement between the PRC, GEF, ADB, and other donors, promotes the introduction of an integrated ecosystem management approach in combating land degradation, reducing poverty, and restoring dryland ecosystems in the western region of the PRC. Through the almost completed GEF and ADB-cofinanced Capacity Building to Combat Land Degradation Project, the State Forestry Administration has effectively established the partnership and promoted the application of the integrated ecosystem management approach over the last few years. Policies, laws, and regulations for land degradation control have been developed, national and provincial coordination have been strengthened, provincial and county operational arrangements have been improved, collection and exchange of land degradation data have been initiated, and investment projects have been prepared and are now being implemented.

The Framework Program for 2008–2010, prepared by the State Forestry Administration with support from ADB, comprises a $611 million portfolio of investment and capacity building projects. ADB is committed to remain an active partner to implement the partnership's Framework Program. The program includes the Ningxia Integrated Ecosystem and Agricultural Development Project (a $100 million loan from ADB) and the Silk Road Ecosystem Restoration Project (a proposed $100 million loan from ADB). ADB also intends to continue providing support for further strengthening the management capacity of the partnership.

Despite the significant achievements, remaining challenges include (i) furthering the partnership's investment activities, (ii) seeking further cooperation and integration with other ongoing programs in and outside the PRC, (iii) disseminating experiences with associated policy and institutional reforms, and (iv) introducing innovative approaches to combating land degradation. These include (i) cross-sector studies on land degradation control and carbon sequestration (including forest, grassland, and farm land); (ii) economic and cost–benefit analysis for land degradation control including developing methodologies to establish public–private partnerships; (iii) pilot studies on payment for ecological services and other ecological compensation mechanisms, and their impacts on sustainable land degradation management; and (iv) development of a comprehensive land degradation assessment and monitoring system.

The Central Asian Countries Initiative for Land Management

The Central Asian Countries Initiative for Land Management (CACILM) brings together Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan, supported by the international donor community, to work

towards sustainable land management, reverse land degradation, and adapt to climate change. CACILM's goal is the restoration, maintenance, and enhancement of the productive functions of the land in Central Asia, leading to improved economic and social well-being of those who depend on these resources while preserving the ecological functions of the land.

CACILM is being implemented in a multicountry framework which includes a 10-year program of activities in each country based on national programming frameworks. Total program financing may be up to $1.4 billion during 2006–2015. Committed funding for the inception phase is approximately $155 million, $20 million of which is from the GEF as grant cofinancing.

Overall progress of the CACILM inception phase has been satisfactory. The CACILM partnership and program has been successfully established. Management, administration, and monitoring and evaluation systems are operational regionally and nationally. The multicountry projects on sustainable land management research, information systems, and knowledge management are showing results. National demonstration projects have been initiated in all five Central Asian countries, with these projects showing promising results in the Kyrgyz Republic, Tajikistan, and Turkmenistan.

CACILM has proven to be highly relevant. The CACILM Multicountry Partnership has added value through the enhanced benefits of regional cooperation. CACILM national and donor partners have agreed to continued support of the Multicountry Partnership during the full implementation phase. The CACILM partners are committed to a smooth transition from the inception phase to the full implementation phase, and further committed to speedy completion of the preparation steps. The steering committee has endorsed a new financing strategy and implementation plan concept. The partners are now working to put in place the CACILM program for the full implementation phase (2010–2014).

The CACILM Partnership. ADB has taken the lead in preparing and progressing the CACILM. This strategic partnership with countries and funding agencies was created to help Central Asian countries implement the United Nations Convention to Combat Desertification (UNCCD). This partnership also includes the Global Mechanism of the UNCCD, Canadian International Development Agency, the Convention to Combat Desertification Project of Deutsche Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Cooperation), the International Fund for Agricultural Development, the International Center for Agricultural Research in the Dry Areas, Swiss Development Cooperation, UNDP, and UNEP.

Partnerships

Building partnerships is the fourth thrust of ADB's *Environment Policy*. Partnerships are crucial in catalyzing ADB's efforts to (i) promote environmental interventions to reduce poverty; (ii) mainstream environmental considerations in economic growth; (iii) maintain global and regional life-support systems; and (iv) facilitate harmonization of environmental safeguard frameworks among funding agencies, as well as their convergence among member countries.

Partnerships enable ADB to leverage its wealth of experience and expertise in certain areas, build on the strengths of its partners, and enhance the effectiveness of initiatives to combat environmental degradation while reducing poverty. Moreover, in partnerships with other organizations, ADB encourages DMCs to address issues of regional and global importance that might otherwise receive low priority if viewed purely from a national perspective.

ADB's work with its other partners such as the GEF, Asian Environmental Compliance and Enforcement Network (AECEN) members, UNEP, United States Environmental Protection Agency (USEPA), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), various cofinanciers, and NGOs such as the WWF and International Union for the Conservation of Nature (IUCN, or World Conservation Union) is described below.

ADB and the Global Environment Facility

ADB continues to strengthen its partnership with the GEF, especially since completing the agreements required for direct access to GEF resources for the cofinancing of ADB projects in 2004.

ADB is one of 10 GEF agencies with access to GEF financing. In some cases, ADB leads GEF-supported programs that involve more than one of these agencies. When appropriate, ADB also enters into partnerships with other GEF agencies for implementation of specific projects.

As of 2008, GEF grant cofinancing of ADB programs and projects include a total of three programs and more than 20 individual ADB–GEF projects, with cofinancing of roughly $157 million. The breakdown is as follows:

(i) one ADB–GEF program and 14 ADB–GEF projects currently under implementation, with cofinancing of $80.5 million;
(ii) two ADB–GEF programs and seven ADB–GEF projects (including four subprojects under the two programs) approved by the GEF Council with $41.6 million in cofinancing, most of which are in the design phase; and
(iii) six ADB–GEF projects under review by the GEF with potential cofinancing of $35.1 million.

Box 24. About the GEF

The GEF was established in 1991. It helps developing countries fund projects and programs that protect the global environment by providing grant and non-grant support to projects related to biodiversity conservation, climate change, international waters, land degradation, the ozone layer, and persistent organic pollutants. GEF is an independent financial organization governed by a Council and Assembly of its member countries. The GEF Secretariat serves and reports to these bodies and reviews proposals from countries and GEF agencies prior to their submission for Council approval.

In 2008, the GEF committed a total of $16.3 million through GEF chief executive officer endorsement of four ADB–GEF projects. It also approved two programs and has initially allocated $32.2 million through GEF Council approval of five projects. Of the GEF Council-approved projects, three are associated with the Coral Triangle Initiative program, while another is associated with the PRC–GEF Partnership on Land Degradation Program.

ADB and the Asian Environmental Compliance and Enforcement Network

ADB, along with the United States Agency for International Development (USAID) and other development partners, supported the establishment of AECEN in 2005. AECEN aims to improve compliance with environmental laws in Asia through a regional exchange of innovative policies and practices. It serves as a regional platform to (i) promote the development and implementation of improved environmental laws, regulations, and institutions; (ii) strengthen the capacity of practitioners through specialized training and tools; and (iii) facilitate regional sharing of best practices and information.

Members presently include environmental agencies from India, Indonesia, Japan, the PRC, Nepal, the Philippines, Singapore, Sri Lanka, Thailand, and Viet Nam. Judges, lawyers, officials, and civil society and business leaders also participate in AECEN activities.

In 2008, ADB assisted AECEN in improving its website and back-end programming for efficient data and information management, repackaged good practices on enforcement and compliance in the region, and prepared a paper on common issues and practices on environmental compliance and enforcement in Asia.

With support from USAID and other development partners, AECEN has helped or is helping to (i) establish compliance assistance centers in Thailand and the Philippines with a replication in West Bengal, India; (ii) develop a pollution charge program in Sri Lanka; (iii) establish 117 green courts in the Philippines; (iv) conduct training in Viet Nam; and (v) facilitate twinning partnerships between two AECEN members for diffusion of knowledge and experience on a special topic. AECEN also trained judges in natural resources damages assessment using a new environmental law training manual, in collaboration with USEPA.

ADB and the United Nations Environment Programme

UNEP is involved in implementing ADB TA projects, such as the GMS CEP national environmental performance assessment reporting component; coastal and marine environmental management in the South China Sea; simulation modeling on acid rain and emissions reduction; and establishing a regional network for a monitoring and early warning system to mitigate the impacts of dust and sandstorms in Northeast Asia. UNEP is also facilitating investment in local renewable energy and energy efficiency by helping sustainable energy entrepreneurs access enterprise development support and seed capital from mainstream investors.

ADB has partnered with UNEP on specific collaborative programs, capacity building, and information management, as defined in the memorandum of understanding for cooperation signed in 2000. Currently, UNEP and ADB are collaborating in implementing the CACILM and CAI-ASIA programs.

UNEP provided inputs for the preparation of two major ADB publications, the *Atlas on Environment in the Greater Mekong Subregion*[23] and the *Asian Environment Outlook 2005*.[24] Along with the World Health Organization (WHO), UNEP helped organize a high-level meeting on health and environment attended by delegates from the Association of Southeast Asian Nations (ASEAN) and East Asian countries.

ADB and UNEP, together with UNESCAP, will collaborate in preparing the *Asian Environment Outlook 2010*, which will assess environmental sustainability patterns and prospects in terms of the resilience and resource efficiency of economic growth in the region.

ADB and the United States Environmental Protection Agency

In 2005, ADB signed a letter of intent with the USEPA to explore possibilities for effective collaboration on the environment, sustainable development, and natural resource management. This includes cooperation on (i) improving AQM, especially in urban areas; (ii) improving the provision of safe

[23] ADB. 2004. *Atlas on Environment in the Greater Mekong Subregion*. Manila.

[24] ADB. 2005. *Asian Environment Outlook—Making Profits, Protecting our Planet: Corporate Responsibility for Environmental Performance in Asia and the Pacific*. Manila.

drinking water, especially in urban areas; (iii) sound management of toxic substances, especially of persistent bio-accumulative toxins such as persistent organic pollutants; (iv) governance and local capacity building related to the environment; and (v) improving water resource management.

A number of productive activities have been initiated or undertaken. The most active program of collaboration is in the PRC, although there are also joint activities in the Greater Mekong Subregion, Central Asia, and South Asia. For example, in the PRC, ADB, USEPA, and the PRC State Environmental Protection Administration (now the Ministry of Environmental Protection) signed the Statement of Cooperation in December 2006 to foster tripartite cooperation in the country. The TA project on Design of the National Sulfur Dioxide Emission Trading System for the PRC, approved in 2008, is part of this cooperation. ADB and the USEPA sponsored the workshop on Urban Air Quality Management in India in December 2007, and are considering replicating this in other cities in India. Other areas for cooperation being explored are climate change projects in the PRC and India, persistent organic pollutants in the PRC and Central Asia, and GMS CEP on environmental governance, especially multi-jurisdictional management of transboundary ecosystems.

ADB and the United Nations Economic and Social Commission for Asia and the Pacific

Since 1990, ADB has been a close partner of UNESCAP in organizing ministerial conferences on environment and development, and in preparing the State of the Environment in Asia and the Pacific. Both efforts are instrumental in creating political and public awareness of regional environmental issues, and in driving the adoption of a regional strategy on environmentally sound and sustainable development. ADB's partnership with UNESCAP has played a big role in identifying major programs and projects to promote environmentally sound and sustainable development in the region.

TA projects jointly implemented with UNESCAP included the promotion of sustainable development, capacity building, and regional cooperation to address transborder environmental problems related to atmospheric pollution, including dust and sandstorms. Several key publications became byproducts of this collaboration, including *Asian Environment Outlook—Making Profits, Protecting our Planet: Corporate Responsibility for Environmental Performance in Asia and the Pacific (2005)* (footnote 24)*; Southeast Asia Subregional Report for the World Summit on Sustainable Development, 2002;*[25] and *State of the Environment in Asia and the Pacific, 1995 and 2000.*[26]

ADB and its Cofinanciers

ADB recognizes the critical role of bilateral and international agencies in facilitating ADB's program of environmental assistance through targeted cofinancing. Such bilateral support has come from Australia, Canada, Denmark, Finland, Italy, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, and Switzerland. This has enabled ADB to increase support for DMCs to combat land degradation, improve the urban environment, conserve biodiversity, mitigate the impacts of and adapt to the effects of climate change, and rehabilitate natural and physical resources in disaster-affected areas.

Through strategic partnerships with its development partners, ADB helps its DMCs address these environmental problems, while tackling the challenges caused by

[25] ADB. 2002. *Southeast Asia Subregional Report for the World Summit on Sustainable Development*. Manila.

[26] 1995 and 2000. *State of the Environment in Asia and the Pacific*. New York. ADB/UNESCAP.

Box 25: Bilateral Support for Environmental Projects

The Government of the Netherlands, through the Dutch Cooperation Fund ($5 million), cofinanced a regional technical assistance project on Promotion of Renewable Energy, Energy Efficiency, and Greenhouse Gas (GHG) Abatement in developing member countries (DMCs), to increase access of the poor to energy services and help reduce GHG emissions.

The Government of Canada supported the Canadian Cooperation Fund on Climate Change, which seeks to engage DMCs at the programming and policy levels in the management and abatement of climate change. Among others, the fund supports capacity building in renewable energy and energy efficiency activities, and carbon sequestration and adaptation to climate change.

The Government of Denmark established the Danish Cooperation Fund for Renewable Energy and Energy Efficiency in Rural Areas. Among others, the fund supports the work of the Asian Development Bank (ADB) to reduce poverty and improve living conditions in communities underserved by national power grids and other forms of modern energy, and to promote GHG abatement.

The Government of Finland and ADB signed a channel financing agreement that prioritizes environmental protection for project funding. The Finnish Technical Assistance Grant Fund, provided to ADB by Finland's Department for International Cooperation, assists DMCs in activities focused on environmental protection and development of renewable energy forms.

The governments of Sweden and Norway, along with ADB, have contributed to the Poverty Environment Fund (PEF) to finance the Poverty Environment Program. With initial funds of $3.6 million, the PEF has recently been replenished by the Government of Norway in the equivalent amount of $2.4 million.

poverty, or vice versa. Highlights of some key partnerships are described in Box 25.

ADB and Nongovernment Organizations

ADB recognizes the significant role of NGOs in development. NGOs serve as effective intermediaries with local communities, helping to understand and respond to their needs. NGOs use innovative approaches to development, help ensure that projects are implemented as envisioned, nurture continuity in project work, advocate increased transparency and good governance, and give voice to marginalized groups. ADB welcomes the experience, lessons, and good practices that NGOs share in addressing environment and development challenges.

ADB has also entered into partnership with NGOs to implement projects. For example, in five of 16 subprojects funded under ADB's Poverty and Environment Program , NGOs provided assistance in a variety of ways—as cofinancier, implementing agency, monitoring and evaluating organization, information provider, and training beneficiary.

ADB also has encouraged dialogue with NGOs on project-specific and policy-related issues. In this regard, ADB has had fruitful discussions with NGOs, including the NGO Forum in Asia, on project-specific issues, and, more recently, on issues associated with ADB's safeguard policy update.

In the field of environment, ADB has also had productive collaborations with NGOs. It signed formal cooperation agreements with major NGOs such as the IUCN and the WWF.

World Wide Fund for Nature (WWF). ADB and the WWF signed a memorandum of understanding in 2001 that provides a flexible arrangement for active collaboration

between the two organizations in promoting the environmental sustainability of economic development in Asia and the Pacific. This memorandum serves as a framework under which ADB and the WWF conduct joint activities and review their progress every year.

A consultation meeting on the ADB–WWF partnership was held in July 2008 to review current areas of collaboration and mutual interests and discuss potential areas for further joint ADB–WWF undertakings. Several areas identified for continued collaboration are

(i) with the GMS—to share information and outputs on hydropower guidelines and prepare a medium-sized ADB–GEF project on Biodiversity Corridor Initiative;
(ii) for the Coral Triangle Initiative—to prepare the draft results monitoring framework and capacity assessments of each CTI country, in order to deliver on anticipated results and strengthen the CTI Secretariat;
(iii) with the PRC—to explore joint analysis of the River Basin Water Management Allocation and exchange information and lessons learned on community and enterprise biogas activities and water;
(iv) for the Heart of Borneo—to develop a programmatic approach for Heart of Borneo, develop a reduced emissions from deforestation and degradation program tied to Heart of Borneo, explore opportunities to support creation of a "secretariat" function for the Heart of Borneo government process, and develop a larger program than the current project investment facility, including a reduced emissions from deforestation and degradation dimension; and
(v) on energy efficiency and climate change—to develop policy and promote advocacy focusing on energy efficiency, continue work on energy investment, and explore possible collaboration on awareness raising on energy efficiency and climate change at the country level.

As an implementing partner to CEP BCI, the WWF implements BCI activities in Cambodia, the Lao PDR, and Viet Nam.

World Conservation Union (IUCN). ADB and IUCN signed a memorandum of understanding in November 2004 at the Third IUCN World Conservation Congress, which provides impetus to ADB's ongoing collaboration to promote links among health, poverty, and conservation. During the past decade, ADB and IUCN have worked on several programs and projects, from capacity building exercises to regional technical assistance, conferences, and publications. The cooperation between ADB and IUCN benefits greatly from IUCN's participation in, and access to, conservation technologies in various environmental fields, as well as the organization's knowledge of country-specific environmental conservation issues.

ADB and IUCN collaborate in the fields of environmental law, poverty and environment linkages, biodiversity, environmental impact assessment, project monitoring, coastal resources management, and the on-going Clean Air Initiative for Asian Cities, as well as inputs into ADB's GMS Core Environmental Program. ADB and IUCN have also completed a joint publication on *Poverty, Health, and Ecosystems: Experience from Asia*.[27]

[27] P. Steele, G. Oviedo, and D. McCauley, eds. 2007. *Poverty, Health and Ecosystems: Experience from Asia*. Gland, Switzerland and Manila, Philippines. IUCN/ADB.

Chapter 4
Looking Forward

Guided by Strategy 2020's increased operational emphasis on environment, ADB will help its DMCs achieve environmentally sustainable growth in the midst of the global economic slowdown. ADB will do so not only to secure the economic and social gains achieved in Asia and the Pacific during these past decades, but also to seize the opportunity to integrate environmental sustainability into the stream of investments in the energy, transport and communication, and agriculture and natural resources sectors which are needed to generate livelihood for the poor and reduce pressure on the region's natural resources and environment.

From both the financial and environmental perspectives, the financial crisis and the climate crisis are outcomes of inefficient use of resources, and of weak policies, institutions, and governance systems. From an environmental perspective, the first deficiency highlights the need for initiatives toward resource-efficient and low-carbon economies. The second deficiency highlights the need for policy reforms, strong institutions, improved capacity, and effective governance systems.

ADB has long supported DMCs to address these inefficiencies and weaknesses but the situation now calls for heightened efforts. To address the challenge brought about by the global economic downturn, ADB will be guided by its increased operational emphasis on environment under Strategy 2020. However, implementation of environmental actions will vary according to DMCs' needs.

In promoting environmentally sustainable growth in Asia and the Pacific, ADB is expanding its promotion of, and investment in, sound environmental management. In its programs, policies, and strategies, ADB helps its DMCs move their economies onto low-carbon growth paths, adapt to the impacts of climate change, and reduce the carbon footprint of Asia's cities by assisting DMCs address a range of environmental problems resulting from rapid urbanization. It supports complementary actions such as mainstreaming environmental considerations into policies and investment programs, while strengthening the legal, regulatory, and enforcement capacities. It applies environmental safeguards in its projects and strengthen country systems. ADB promotes and supports regional cooperation on shared environmental public goods, and facilitates the transfer of knowledge on environmental management and new technologies.

Strategies and Actions

Looking ahead, in dealing with the environmental challenges affecting the region, ADB will undertake the following strategies and actions to mainstream environment into its operations.

Mainstreaming environmental considerations into policies, plans, sector strategies, and programs. ADB will continue to mainstream environmental considerations into DMCs' policies, plans, programs, and projects. The deployment of environment and climate change experts in regional departments and in selected resident missions is expected to deepen the environment mainstreaming in country partnership strategies through country environment analysis and climate change implementation plans. This is expected to enhance not only the mainstreaming of environment but also of climate change considerations into ADB priority sectors in a country. For example, in the transport sector, ADB will assist DMCs to shift towards integrated urban planning and investment in public transport systems, pedestrian-friendly urban development, and other mobility options. Investments in the agriculture and natural resource management sector will strike a better balance between improved productivity and conservation of natural infrastructure, including taking into account climate change adaptation measures.

ADB will also strengthen the mainstreaming of environment into its subregional economic cooperation programs. Inspired by the approach applied in the GMS, mainstreaming of environmental considerations will further enhance the South Asia Subregional Economic Cooperation programs and Central Asia Regional Economic Cooperation program.

The application of different tools to mainstream environmental considerations into development plans will be expanded to other sectors and countries. Strategic environmental assessment, which was applied in the formulation of Viet Nam's national power development plans, will be adopted in developing the tourism development plan in Cambodia. Use of another tool, spatial multicriteria analysis, will inform the planned portfolio in the transport and tourism sectors in some GMS countries by identifying suitability and vulnerability layers to target mitigation measures and, ultimately, investments.

Expanding investments in cleaner, efficient, and renewable energy sources. ADB will continue to help DMCs address the main causes of greenhouse gas emissions. It will scale up its efforts to help DMCs move their economies onto low-carbon growth paths by improving energy efficiency; expanding the use of clean energy sources; promoting improved urban sanitation and reduced fugitive methane emissions; enabling sustainable transport policies and applying efficient systems; and promoting sustainable land use and forestry. It will do so by continuous engagement with DMC governments through policy dialogue, transfer of knowledge and new technologies, and improved access to financing mechanisms. ADB will continue to engage with the private sector and catalyze private sector capital.

Under the Energy Efficiency Initiative, ADB will work with priority DMCs to stimulate financial policy and regulatory and institutional reforms that will encourage the deployment of renewable energy and energy efficient technologies. The third phase of the initiative will explore energy efficiency market opportunities in Afghanistan, Bangladesh, Cambodia, Lao PDR, Mongolia, and Uzbekistan. Under the Sustainable Transport Initiative, efforts are under way to improve existing mass transit systems or design new ones in cities, including Bangkok, Hanoi, Ho Chi Minh City, Karachi, Lahore, and Manila.

The CMI will provide additional financial resources to develop projects that qualify for credit under the Clean Development Mechanism of the Kyoto Protocol until 2012. The Future Carbon Fund, established in 2008, will provide financing for ADB-supported projects to generate carbon credits beyond the Kyoto Protocol after 2012.

ADB will continue to support investments to reduce greenhouse gas emissions from transport, residential and commercial buildings, industry, and waste management that offer strong potential for co-benefits by improving air quality, and improved traffic management and waste management. ADB will assist DMCs reduce fugitive greenhouse gas emissions, such as methane released from landfills, either as stand-alone interventions or as a component of ADB-funded urban environmental improvement projects. It will support investments that reduce emissions from deforestation and degradation, and promote integrated pest management to reduce dependence on chemical fertilizers that emit significant amounts of nitrous oxide—a powerful greenhouse gas with approximately 310 times the warming potential of CO_2.

Several pipeline projects in 2009 support ADB's thrust towards use of cleaner, energy efficient, and renewable energy sources. Included are investments in renewable energy, such as from hydropower, geothermal, and biomass; energy efficient technologies, such as the integrated gasification and combined cycle;[28] and cleaner energy sources, such as the use of natural gas. In Cambodia, the Lao PDR, and Viet Nam, off-grid and decentralized renewable energy options are being assessed, and key investments are being explored in biogas, biomass, micro-hydro, and solar power. In the PRC, an integrated gasification and combined cycle power plant is being proposed in 2009 in Tianjin. ADB will finance the construction and commercial operation of the plant.

ADB is also providing support for innovation in technology or project design to mitigate greenhouse gas. For example, a regional TA project will formulate recommendations to overcome key global barriers in financing carbon capture and storage in developing countries. Another TA project will address technical and nontechnical issues for power generation from waste coal. A 2009 project, the Sustainable Energy Efficiency Development Program in Pakistan, will support government efforts to establish an enabling policy and a business environment for energy efficiency, and will finance priority projects. Also, to offset the projected increase in CO_2 emissions from freight traffic, a three-pronged approach will be explored in the GMS countries through (i) carbon sequestration or deforestation avoidance, reforestation of watershed areas, and greening of transport corridors; (ii) reduction of emissions from freight traffic through catalyzing and applying improved engine efficiencies and modernized freight fleets with increased volume and lower weight; and (iii) use of a non-fossil-fuel mix, especially cellulosic and second -generation biofuels.

Adapting to the unavoidable impacts of climate change. ADB will continue to help the region's economies mainstream adaptation, and enhance their resilience to adverse impacts. It will incorporate vulnerability risk management into countries' national development strategies and actions, increase climate resilience of vulnerable sectors, climate-proof projects, and address the social dimensions of climate change. ADB will support DMCs' efforts to rehabilitate degraded forests and pasturelands, and protect and manage watersheds. ADB will support DMCs in national assessments of climate change vulnerabilities and in the development of adaptation responses. Planning is being strengthened through better analysis of climate change consequences

[28] An emerging technology where coal gas is manufactured and cleaned in a gasifier under pressure, thereby reducing emissions and particulates.

nationally and locally, and through the identification of cost-effective measures to improve the resilience of infrastructure and vulnerable populations to adverse impacts.

The CCIPs that will feed into CPSs is expected to identify climate change adaptation investments. In preparing for the future impacts of climate change, it will be important to prioritize investments. ADB will undertake dialogue with concerned government agencies to identify and prioritize appropriate adaptation measures which may require investments in inshore coral rehabilitation, watershed reforestation, river levees, wetlands nourishment, and the introduction of crops which are more climate resilient and more resistant. Over the longer term, coastal sea groves may be required for small islands, and dams may need to be raised or reinforced to withstand increased runoff from glacial melt and unseasonal flooding.

ADB is also undertaking several studies on climate change adaptation. A study focusing on climate change migration in Asia and the Pacific will look into climate-induced migration risks, analysis of migration policy options, and recommendations on how to address the policy, institutional, infrastructure, and financing aspects of migration. A regional TA project will outline favorable policy and the technological and fiscal environment for investment in climate change mitigation and adaptation interventions.

ADB will continue to work with other multilateral financing institutions to conduct studies and develop project-level screening tools. For instance, ADB will apply the Climate Framework Integrating Risk Screening Tool (Climate-FIRST) that it is currently developing to screen projects against anticipated climate impacts and minimize vulnerability and risk to the investments of ADB and its partners. It will continue to engage with the Multilateral Financing Institutions Working Group on Environment to develop screening tools to assess project-level risks associated with climate change impacts, and adaptation measures to climate-proof projects.

Public opinion is important in galvanizing action that will influence government leaders to institute policies and develop plans and programs to address the effects and consequences of climate change. To promote proactive responses to climate threats, ADB is training 24 journalists from across Asia and the Pacific on climate change adaptation and mitigation measures.

Promoting livable cities. ADB will further respond to the region's needs to (i) develop and implement environmentally sustainable urban mobility options; (ii) improve water supply and waste management; (iii) reduce air pollution and achieve co-benefits; (iv) improve energy efficiency; and (v) include adaptation and other measures to create cleaner, greener, and climate resilient urban environments. Programs and projects to promote livable cities will be designed to reflect the objectives of relevant ADB initiatives such as the Cities Development Initiative for Asia (CDIA), Water Financing Partnership Program, Sustainable Transport Initiative, and Clean Air Initiative for Asian Cities.

Using a demand-driven approach, ADB's CDIA will support the identification and development of urban investment projects in the framework of existing city development plans emphasizing one or more of the following impact areas: urban environment improvement, urban poverty reduction, and climate change mitigation or adaptation. The CDIA will work with major emerging client countries including the PRC, India, and Indonesia—countries with the greatest greenhouse gas impact. It will also work with the Lao PDR, Nepal, Viet Nam, and other countries likely to be heavily impacted by climate change.

The Sustainable Transport Initiative will roll out a new paradigm for urban transport development and "rules of engagement" for sustainable transport solutions and services, test pilot projects developed for clean and energy efficient urban transport, and test ways by which the transport sector can respond to the growth of CO_2 emissions.

Several ongoing and pipeline projects in 2009 on urban improvement involve investments in urban infrastructure, and feature integrated approaches in sustainable urban management. Included in the 2009 portfolio is a multitranche financing facility for the North Eastern Region Capital Cities Development Investment Program in India, which will improve and expand urban infrastructure and services in the cities and slums and strengthen the urban institutional, management, and financing capacities of institutions, including local urban agencies. The Municipal Waste to Energy Program in the PRC will support the construction and operation of a waste-to-energy project with cleaner technologies that will serve the solid-waste disposal needs of the municipalities and supply electricity to the local grid. The project features a model for private sector participation in waste-to-energy through a public–private partnership.

Supporting natural resource management to conserve biodiversity, maintain ecosystem services, and address climate change. The recently released *World Development Report 2008: Agriculture for Development*[29] focuses on the issues of environmental poverty, and concludes that, given the rising land and water scarcity and the added pressures of globalization, the future of agriculture is intrinsically tied to better stewardship of natural resources. The adverse impacts of climate change on yields and cropping patterns will further exacerbate the situation. These and the rising food prices are expected to hurt the poor, the most vulnerable groups who are the poor urban consumers and the rural poor. ADB will continue to support interventions that will improve the sustainable production efficiencies of scarce land, water, and other natural resources and enhance the productivity of small farmers. In this regard, ADB will also support investments that at the same time conserve biodiversity and maintain or enhance valuable ecosystem services. ADB's support will also cover (i) reforestation, which also contributes to carbon sequestration; (ii) the application of sustainable natural resource management approaches, such as integrated ecosystem management, which links natural ecosystem capacities with socioeconomic activities; and (iii) the introduction of market approaches such as payment for environmental services.

ADB's support will be enhanced for the qualitative shift in DMCs' investment focus in this sector towards natural resource (land, marine and coastal, forest, and water) management, including adaptation considerations, while improving agricultural productivity to contribute to food security. This shift is important because of the strong link between this sector and poverty reduction. For example, CACILM has been refocused to include climate change adaptation and water resource management to foster sustainable and climate resilient water and land management for food security. CACILM's climate change adaptation strategies will address the vulnerability in two major sectors: water resources, and irrigated and rain-fed agriculture. These sectors are interlinked because of the high dependence of the agriculture sector on the scarce water resources in Central Asia. The second priority will be to examine the vulnerability of pasture land ecosystems, which will determine the long-term viability of livestock. The third challenge is to assess the vulnerability of mountain ecosystems, including an assessment of likely effects of climate change on the glaciers in the Tian Shan and Pamir mountain ranges.

[29] World Bank. 2007. *World Development Report 2008: Agriculture for Development*. Washington, USA.

The 2009 projects include structural and nonstructural approaches to improve agricultural productivity and conserve natural resources. ADB is preparing a sustainable forest management project for the Heart of Borneo, to be cofinanced by the GEF. The biggest threat is from forest conversion into rubber and oil plantation, logging for timber and pulp production, forest fires, oil and mining industries, and illegal wildlife trade which contribute to the considerable loss in forest biodiversity and greenhouse gas emissions from deforestation and degradation. The proposed project aims to address these threats through the collaborative development of a comprehensive Forest Conservation and Management Plan that will be accepted and implemented by stakeholders with the support of the GEF and ADB.

An integrated river basin management approach will be adopted in Indonesia's Integrated Citarum Water Resources Management Investment Program, where the government and the community work in partnership to promote coordinated development and management of water, land, and related resources to maximize economic benefits and social welfare in an equitable manner, without compromising the sustainability of vital ecosystems.

The Shanxi Integrated Agricultural Development in Valley and Watershed Areas in the PRC will enhance the production of high-quality agricultural products through modern, appropriate, and environmentally sound technologies and use of latest crop varieties in response to market demand. It will also support the efficient use of water resources, convert land with a slope of over 25 degrees to perennial crops and forestry, reduce the accelerated soil erosion, phase out chemical fertilizers, and adopt integrated pest management techniques.

Nonstructural approaches, including wetland management as an integral part of wastewater treatment investments, are under consideration in Thailand and Viet Nam.

ADB will continue to explore approaches to conserve biodiversity and ecosystem services and scale up their application. One approach being tested in Viet Nam and Cambodia mobilizes private sector investments through incentive-based mechanisms for biodiversity conservation and ecosystem services. ADB will scale up the application of a pilot policy for payment of ecosystem services in central Viet Nam and Cambodia. This scheme has been successfully adopted in five target provinces in the Dong Nai watershed in Viet Nam. To synthesize and disseminate lessons learned to key stakeholders on these and similar innovative approaches tested within the region, a 2009 study is documenting mechanisms to create or capture markets for ecosystem services aimed at wide dissemination to identified stakeholders.

ADB recognizes that significant adjustments will be needed to deal with dramatic shifts in local and regional hydrological patterns. It will respond to DMCs' demand for drought- and flood-resistant crops, irrigation innovations,

Box 26. Proposed Heart of Borneo Project (HoB)

The Heart of Borneo, an area that straddles the transboundary highlands and adjacent foothills and lowlands of Indonesia and Malaysia (and parts of Brunei), is the largest contiguous forest area remaining in Southeast Asia. Its forest landscape is one of the most biologically diverse habitats on Earth and hosts many endangered species such as orangutans, elephants and rhinos. Effective management of the HoB is complicated by the fact that several countries in various stages of development are involved with implications on transnational coordination of resource flows of timber and other forest resources coupled with movement of biodiversity and communities.

and other technological and management measures to improve agricultural productivity while establishing resilience to climate change.

Promoting policy dialogue, institutional reform, country system strengthening, and capacity development. ADB's complementary support through policy dialogue, institutional reform, and capacity development will be enhanced. As governments across the region increasingly include environmental sustainability considerations in their development policies, plans, and programs, they will require a wide range of new financial instruments and market-based measures. Sector ministries will need new capacities and policy tools to support the shifts to low-carbon and energy- and resource-efficient economies, and in this regard ADB will continue to strengthen environment and related policies and the capacity of national and local environmental authorities and other institutions. Recognizing the importance of managing the emerging economies' expanding environmental footprints that cross borders, ADB will boost its efforts to help improve the enforcement capacities of environmental agencies and other institutions in the region, and promote and support DMCs' application of innovative mechanisms to improve environmental compliance.

In response to the Accra Agenda for Action signed by heads of states of developing and donor countries and heads of multilateral financing institutions in September 2008, ADB will continue to strengthen and, if approved by the Board, consider the use of country safeguard systems on environment on conditions of "equivalence" and "acceptability." Based on a DMC's demand to use its country safeguard system on environment in the context of an ADB-financed project, ADB will conduct diagnostics of these country safeguard systems to assess equivalence with ADB's environmental assessment and other requirements, and to assess the executing agency's implementation capacity. ADB will work with its member countries to identify gap-filling measures and prepare action plans to improve the quality of country safeguard systems and strengthen the agencies' implementation capacity. Dedicated resources will be needed to finance these activities.

Promoting regional cooperation. ADB will further mainstream the environment into its subregional programs. It will support effective approaches and solutions to shared environmental public goods. Technical and financial support will be provided to deepen the cooperation and scale up implementation of various subregional programs.

In the GMS, ADB will maintain its support for the next phase implementation of the Core Environment Program which is intended to mainstream environment into its economic cooperation program. The CEP is expected to positively influence GMS strategies and choice of investments, as well as synergize poverty reduction and biodiversity conservation.

In Central Asia, ADB will step up support for sustainable land management and reverse land degradation in Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan. ADB's support will also cover CACILM's new focus on climate change adaptation while restoring, maintaining, and enhancing the productive and ecological functions of the land in Central Asia. This is expected to lead to improved economic and social well-being of those who depend on these resources, while preserving the ecological functions of the land.

Under the Coral Triangle Initiative (CTI), ADB is the lead GEF agency in organizing the program and mobilizing resources from a range of partners, to support conservation, policy development, and institutional strengthening efforts. As part of the CTI program, ADB is implementing three subprojects to strengthen sound environmental management

in the BIMP-EAGA, promote coastal and marine resources management in the Coral Triangle of the Pacific, and promote regional cooperation on knowledge management, policy, and institutional support to the CTI.

Forging partnerships. Responding to Asia's environmental challenges will require the full engagement of all development partners across the region, with each bringing its own unique mix of skills, interests, and objectives. ADB enjoys close working relationships not only with its DMCs, but with many other partners—including the Global Environment Facility, several UN agencies, civil society, environmental NGOs such as the World Wide Fund for Nature and the World Conservation Union, international organizations including multilateral and bilateral organizations, and academic institutions—which complement ADB's core competencies and allow for stronger responses to DMC needs. ADB will avail itself of such relationships, including cofinancing partnerships, to maximize the impact of its own staff and financial resources. It will facilitate the sharing of experience and good practices among its DMCs through these partnerships.

ADB will also engage with the private sector, as it is central to any strategy for achieving environmentally sustainable economic growth, considering that most of the day-to-day decisions that collectively set the environmental course of economic development are made by the private sector in response to public policy incentives and societal expectations.

Applying safeguards. ADB will roll out its new SPS designed to be more relevant to client needs and more effective in protecting the people and the environment. The new policy is intended to improve clarity, coherence, and consistency among all three safeguard policy areas; balance a front-loaded procedural approach with one also focused on results during implementation; adapt the implementation of safeguard policies to an evolving range of ADB products and services; harmonize safeguard practices with development partners and align safeguard approaches to client capacities; and improve internal safeguard processes and resource allocation. The policy also introduces provisions to strengthen and apply country safeguard systems for ADB projects, subject to meeting conditions of equivalence and acceptability.

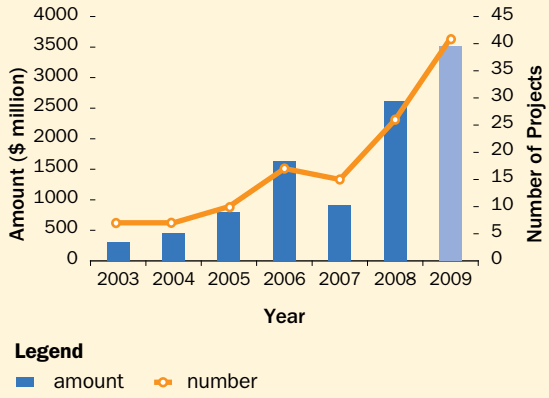
To improve awareness and understanding on the new SPS, ADB is briefing and training staff, borrowers and clients and other stakeholders. It is also revising its environmental assessment guidelines, handbooks on involuntary resettlement and Indigenous Peoples, and operations manuals.

A Partner and Stimulus for Environmental Change

Strategy 2020 shows how ADB will remain a vital and relevant institution in meeting the current and emerging environmental challenges in Asia and the Pacific. The promotion of clean and efficient energy, sustainable transport, improved urban environmental management, conservation and management of natural resources, and climate change adaptation programs is expected to have an increasingly prominent place in the region's priorities and ADB's programs, particularly given the accelerated investments coming in to stimulate the economies in the region. ADB's 2009 expected lending pipeline includes 41 projects supporting environmental sustainability valued at $3.5 billion (Figure 4.1).[30] This is a significant increase over the 26 projects with environmental sustainability as a theme valued at $2.6 billion approved in 2008. Indeed, DMCs' investments in

[30] Based on downloaded data from the Project Processing Information System in March 2009.

Fig. 4.1: Projects with Environmental Sustainability as Theme: Loan Amount and Number of Projects, 2003–2009



energy, water supply, sanitation and waste management, and agriculture and natural resource management have started making quantitative and qualitative shifts toward improved environmental outcomes. During this global economic crisis, ADB will be vigilant and remain responsive to our DMCs' new needs and demands. It will continue to be a stimulus for environmental change and remain a strong partner to its DMCs in their pursuit of environmentally sustainable growth in Asia and the Pacific.

Appendixes

Appendix 1
Projects with Environmental Sustainability (ES) as a Theme (1995-2008)

Region	Country and Loan No.	Project Title	Sector	Environmental subtheme	TOTAL (US$ million)
		2008			
CWRD	GEO-2441	Municipal Services Development	MS	UEI	40.00
SARD	IND-2410	Uttarakhand Urban Sector Development Investment Program (Subproject 1)	MS	UEI	60.00
SARD	IND-2417	Gujarat Paguthan Wind Energy Financing Facility	EN	CEET	45.00
SARD	IND-2419	Mundra Ultra Mega Power Project	EN	CEET	450.00
SARD	IND-2417	Gujarat Paguthan Wind Energy Financing Facility	EN	CEET	60.00
SARD	IND-2456	Urban Water Supply and Environmental Improvement in Madhya Pradesh (Supplementary Loan)	WS	UEI	71.00
SARD	IND-2461	Himachal Pradesh Clean Energy Development Investment Program - Tranche 1	EN	CEET	150.00
SARD	IND-2476	Rural Electrification Corporation of India	MS	CEET	225.00
SARD	IND-2498	Uttarakhand Power Sector Investment Program (Subproject 2)	EN	CEET	62.40
CWRD	PAK-2411	Barani Integrated Water Resources Sector Project	MS	NRM	75.00
EARD	PRC-2407	Gansu Baiyin Urban Development Project	MS	UEI	80.00
EARD	PRC-2408	Gansu Heihe Rural Hydropower Development Investment Program (Dagushan Hydropower Project) - Subproject 2	EN	CEET	28.00
EARD	PRC-2420	Xinjiang Municipal Infrastructure and Environmental Improvement Project	MS	UEI	105.00
EARD	PRC-2422	Municipal District Energy Infrastructure Development Project	EN	CEET	200.00
EARD	PRC-2426	Guangdong Energy Efficiency and Environment Improvement Investment Program - Tranche 1	EN	CEET	35.00
EARD	PRC-2428	Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin Project	EN	NRM	100.00
EARD	PRC-2435	Inner Mongolia Wind Power	EN	CEET	24.10
EARD	PRC-2436	Ningxia Integrated Ecosystem and Agricultural Development Project	AG	NRM	100.00
EARD	PRC-2474	Dryland Sustainable Agriculture	AG	NRM	83.00
EARD	PRC-2487	Songhua River Basin Water Pollution Control and Management	WS	UEI	200.00

Region	Country and Loan No.	Project Title	Sector	Environmental subtheme	TOTAL (US$ million)
EARD	PRC-2494	Qingdao Water Resources and Wetland Protection Project	MS	NRM	45.00
PARD	SAM-2440	Sanitation and Drainage (Supplementary Loan)	WS	UEI	2.80
SARD	SRI-2477	Dry Zone Urban Water and Sanitation	WS	UEI	59.80
CWRD	UZB-2492	Water Resources Management Sector Project	AG	NRM	100.00
SERD	VIE-2429	Song Bung 4 Hydropower Project	EN	CEET	196.00
SERD	VIE-2457	GMS: Sustainable Tourism Development	IN	NRM	10.00
Subtotal					**2,607.10**
		2007			
SERD	CAM-2376	Tonle Sap Lowlands Rural Development Project	MS	NRM	10.10
SARD	IND-2309	Uttaranchal Power Sector Investment Program (Subproject 1)	EN	CEET	41.92
SARD	IND-2326	Tata Power Wind Energy Financing Facility	EN	CEET	79.27
SARD	IND-2366	Rajasthan Urban Sector Development Investment Program (Subproject 1)	MS	UEI	60.00
SERD	INO-2349	West Jakarta Water Supply Development	WS	UEI	50.00
CWRD	KGZ-2314	Southern Agriculture Area Development	AG	NRM	15.00
CWRD	PAK-2310	Sindh Coastal Community Development	MS	NRM	36.00
CWRD	PAK-2329	KESC Postprivatization Rehabilitation, Upgrade, and Expansion	EN	CEET	150.00
SERD	PHI-2311	Integrated Coastal Resources Management	AG	NRM	33.80
EARD	PRC-2328	Anhui Hefei Urban Environment Improvement	MS	UEI	150.00
EARD	PRC-2360	Jilin Urban Environmental Improvement Project	MS	UEI	100.00
EARD	PRC-2388	Kunming Qingshuihai Water Supply Project	WS	UEI	80.00
EARD	PRC-2395	Henan Sustainable Agriculture and Productivity Improvement Project	AG	NRM	66.70
CWRD	TAJ-2313	Rural Development Project	AG	NRM	8.80
SERD	VIE-2353	Mong Duong 1 Thermal Power Project (Subproject 1)	EN	CEET	27.86
Subtotal					**909.45**
		2006			
EARD	PRC-2244	Hunan Flood Management Sector Project	AG	NRM	200.00
EARD	PRC-2260	Inner Mongolia Autonomous Region Environmental Improvement	EN	CEET, GREI	120.00
EARD	PRC-2296	MFF-Gansu Heihe Rural Hydropower Development Investment Program (Erlongshan Hydropower Project)	EN	CEET	22.00
EARD	PRC-2237	Shandong Hai River Basin Pollution Control	WS	UEI, CEET	80.00
EARD	PRC-2239	Guangxi Nanning Urban Environmental Upgrading (Guangxi Nanning Urban Infrastructure Development)	WS	UEI	100.00
EARD	PRC-2240	Wuhan Wastewater and Stormwater Management (formerly Wuhan Wastewater and Stormworks Management)	WS	UEI	100.00
EARD	PRC-2297	Nanjing Qinhuai River Environmental Improvement Project	WS	UEI	100.00
SARD	IND-2293	Kolkata Environmental Improvement Project (Supplementary Loan)	WS	UEI	80.00
EARD	MON-2301	Urban Development Sector Project	WS	UEI	28.20

Region	Country and Loan No.	Project Title	Sector	Environmental subtheme	TOTAL (US$ million)
CWRD	PAK-2299	Subproject 1: Lower Bari Doab Canal Improvement Project and the Punjab Irrigated Agriculture Project	AG	NRM	227.80
CWRD	PAK-2287	Renewable Energy Development Sector Investment Program - Project I	EN	CEET	115.00
SARD	SRI-1993	Secondary Towns and Rural Community-Based Water Supply and Sanitation Project (Supplementary Loans)	WS	UEI	60.00
SERD	VIE-2269	Forests for Livelihood Improvement in the Central Highlands (Sector Loan)	AG	NRM	45.00
SERD	VIE-2272	Central Region Small and Medium Towns Development	WS	UEI	53.22
PSOD	PRC-2255	Municipal Natural Gas Infrastructure Development (with equity investment of $25 million)	EN	UEI	75.00
PSOD	IND-2256	Dahej Liquefied Natural Gas Terminal Expansion Project	EN	CEET	150.00
PSOD	INO-2251	South Sumatra to West Java Gas Pipeline Project Phase II	EN	CEET	75.00
Sub-total					**1,631.22**
		2005			
EARD	PRC-2157	Sanjiang Plain Wetlands Protection	AG	NRM	15.00
EARD	PRC-2175	Jilin Water Supply and Sewerage Development	WS	UEI	100.00
EARD	PRC-2176	Fuzhou Environmental Improvement Project	WS	UEI	55.80
EARD	PRC-2207	Henan Wastewater Management and Water Supply Project	WS	UEI	100.00
SERD	VIE-2223	Central Region Water Resources	AG	NRM	74.30
SARD	MLD-2170	Regional Development Project Phase II	WS	UEI	6.00
SARD	SRI-2167	Tsunami-Affected Areas Rebuilding Project	MS	UEI	7.00
SARD	SRI-2168	North East Community Restoration and Development Project II	MS	UEI	26.00
SARD	PAK-2211/2212	Rawalpindi Environmental Improvement	WS	UEI	60.00
PSOD	INO- 2214	Tangguh Liquefied Natural Gas Project	EN	CEET	350.00
Sub-total					**794.10**
		2004			
CWRD	AZE-2119/2120	Urban Water Supply and Sanitation Project	WS	UEI	30.00
EARD	PRC-2112	Liaoning Environment Improvement Project	EN	CEET	70.00
EARD	PRC- 2146	Coalmine Methane Development Project	EN	CEET	117.40
EARD	PRC- 2082	Fujian Soil Conservation and Rural Development II	MS	NRM	80.00
PARD	FSM- 2099	Omnibus Infrastructure Development	MS	UEI	19.00
SARD	BAN-2117	Secondary Towns Integrated Flood Protection (Phase 2)	MS	UEI	80.00
PSOD	IND-2110	Torrent Combined Cycle Power Project	EN	CEET	54.40
Sub-total					**450.80**
		2003			
CWRD	AZE-2068	Flood Mitigation	AG	NRM	22.00
EARD	PRC- 2032	Gansu Clean Energy Development Project	EN	CEET	35.00
EARD	PRC-1996	Wuhan Wastewater Management	WS	UEI	83.00

Region	Country and Loan No.	Project Title	Sector	Environmental subtheme	TOTAL (US$ million)
PARD	FIJ- 2055	Suva-Nausori Water Supply and Sewerage Project	WS	UEI	47.00
PARD	SAM-2026	Sanitation and Drainage Project	MS	UEI	8.00
SARD	PAK-2060/ 2061	Southern Punjab Basic Urban Services	MS	UEI	90.00
SARD	SRI-2027	Northeast Coastal Community Development	AG	NRM	20.00
Sub-total					**305.00**
		2002			
EARD	PRC-1924	Efficient Utilization of Agricultural Wastes Project	MS	CEET	33.12
EARD	PRC-1919	Songhua River Flood Management Sector	AG	UEI	150.00
EARD	PRC-1985	Hebei Province Wastewater Management	WS	UEI	82.36
SERD	CAM-1939	Tonle Sap Environmental Management	AG	NRM	10.91
SARD	BAN-1942	Dhaka Clean Fuel Project	EN	CEET	42.40
SARD	BAN-1943	Dhaka Clean Fuel Project	EN	CEET	30.20
SARD	BAN-1941	Jamuna-Meghna River Erosion Mitigation Project	AG	NRM	42.17
SARD	NEP-1966	Urban and Environmental Improvement Project	MS	UEI	30.00
SERD	INO-1962	Coral Reef Rehabilitation and Management Project	AG	NRM	33.00
Sub-total					**454.16**
		2001			
EARD	PRC-1890	Acid Rain Control and Environmental Improvement	MS	CEET	147.00
EARD	PRC-1835	Yellow River Flood Management Sector Project	AG	UEI	150.00
CWRD	UZB-1833	Ak Altin Agricultural Development Project	AG	NRM	36.00
SERD	LAO-1867	Environment and Social Program	MS	PLIS	20.00
PARD	COO-1832	Waste Management Project	WS	UEI	2.20
Sub-total					**355.20**
		2000			
EARD	PRC-1818	Wind Power Development	EN	CEET	58.00
EARD	PRC1797	Tianjin Wastewater Treatment and Water Resources Protection	MS	UEI	130.00
SERD	VIE-1781	Tea and Fruit Development	AG	NRM	40.20
PARD	PNG-1812	Provincial Towns Water Supply and Sanitation	WS	UEI	15.34
SARD	IND-1813	Calcutta Environmental Improvement	MS	UEI	250.00
SARD	NEP-1820	Melamchi Water Supply	WS	UEI	120.00
SARD	SRI-1767	Protected Area Management and Wildlife Conservation	AG	NRM	12.00
SARD	SRI-1744	Forest Resources Management Sector	AG	NRM	27.00
SARD	SRI-1757	Water Resources Management	AG	NRM	19.70
SERD	INO-1770	Marine and Coastal Resources Management	AG	NRM	50.00
SERD	PHI-1745/ 1746	Pasig River Environmental Management and Rehabilitation Program	AG	NRM	175.00
Sub-total					**897.24**
		1999			
EARD	PRC-1715	Shanxi Environment Improvement	EN	CEET	102.00

Region	Country and Loan No.	Project Title	Sector	Environmental subtheme	TOTAL (US$ million)
EARD	PRC-1692	Suzhou Creek Rehabilitation	WS	NRM	300.00
SERD	LAO-1688	Shifting Cultivation Stabilization	MS	NRM	5.60
SERD	VIE-1702	Ho Chi Minh City Environmental Improvement	MS	UEI	70.00
PARD	RMI-1694	Ebeye Health and Infrastructure	MS	UEI	9.25
SARD	IND-1704	Karnataka Urban Development and Coastal Environmental Management	MS	UEI	175.00
SARD	IND-1719	Urban and Environmental Infrastructure	MS	UEI	200.00
SARD	MLD-1695	Regional Development	MS	UEI	8.00
SARD	PAK-1679	Punjab Farmer Managed Irrigation	AG	NRM	7.80
SARD	SRI-1716	Coastal Resource Management	AG	NRM	40.00
Sub-total					**917.65**
		1998			
EARD	PRC-1636	Fuzhou Water Supply and Wastewater Treatment	WS	UEI	102.00
SERD	THA-1646	Samut Prakarn Wastewater Management (Supplementary)	WS	UEI	80.00
PARD	KIR-1648	Sanitation, Public Health, and Environment Improvement	WS	UEI	10.24
SARD	BAN-1643	Sundarbans Biodiversity Conservation	AG	NRM	37.00
SARD	IND-1647	Rajasthan Urban Infrastructure Development	MS	UEI	250.00
SARD	SRI-1639	Tea Development	AG	NRM	35.00
SERD	INO-1605	Central Sulawesi Integrated Area Development and Conservation	AG	NRM	32.00
SERD	INO-1613	Coral Reef Rehabilitation and Management	AG	NRM	7.00
SERD	PHI-1663/ 1664/ 1665	Metro Manila Air Quality Improvement Sector Development Program	MS	UEI	296.00
Sub-total					**849.24**
		1997			
EARD	PRC-1543	Xi'an-Xianyang-Tongchuan Environment Improvement	EN	CEET	156.00
SERD	LAO-1575	Secondary Towns Urban Development	WS	UEI	27.00
SERD	VIE-1515	Forestry Sector	AG	NRM	33.00
SERD	VIE-1514	Second Provincial Towns Water Supply	WS	UEI	69.00
SARD	PAK-1539	Korangi Wastewater Management	WS	UEI	70.00
SARD	SRI-1545	Upper Watershed Management	AG	NRM	16.60
SERD	INO-1570/ 1571	Coastal Community Development and Fisheries Resources Management	AG	NRM	41.00
SERD	PHI-1562/ 1563	Fisheries Resource Management	AG	NRM	35.22
Sub-total					**447.82**
		1996			
EARD	PRC-1436	Second Industrial Energy Efficiency and Environment Improvement	EN	CEET	178.00
EARD	PRC-1491	Anhui Environmental Improvement-Industry	EN	CEET	112.00

Region	Country and Loan No.	Project Title	Sector	Environmental subtheme	TOTAL (US$ million)
EARD	PRC-1490	Anhui Environmental Improvement - Water	WS	UEI	28.00
EARD	PRC-1498	North China Marine Culture and Coastal Resources Management	AG	NRM	70.00
SERD	CAM-1468	Phnom Penh Urban Water Supply and Drainage	WS	UEI	20.00
SARD	BAN-1486	Forestry Sector	AG	NRM	50.00
SARD	IND-1465	Renewable Energy Development	EN	CEET	100.00
SARD	NEP-1451	Second Tourism Infrastructure Development	IN	UEI	17.20
SERD	INO-1449	BAPEDAL Regional Network	AG	PLIS	45.00
SERD	INO-1475/ 1476	Segara Anakan Conservation and Development	AG	NRM	45.60
SERD	INO-1469	Integrated Pest Management for Smallholder Estate Crops	AG	NRM	44.00
SERD	MAL-1500	Klang River Environmental Improvement and Flood Mitigation	AG	NRM	26.30
Sub-total					**736.10**
		1995			
EARD	PRC-1372	Hainan Agriculture and Natural Resource Development	AG	NRM	53.00
SERD	LAO-1362	Vientiane Integrated Urban Development	MS	UEI	20.00
SERD	THA-1410	Samut Prakarn Wastewater Management	WS	UEI	150.00
SERD	VIE-1361	Provincial Towns Water Supply and Sanitation	WS	UEI	66.00
SARD	BAN-1353	Coastal Greenbelt	AG	NRM	23.40
SARD	PAK-1413	National Drainage Sector	AG	NRM	140.00
SARD	PAK-1403	Forestry Sector	AG	NRM	42.60
SARD	SRI-1402	Plantation Reform	AG	NRM	60.00
SERD	INO-1351	Sulawesi Rainfed Agriculture Development	AG	NRM	30.36
Sub-total					**585.36**
		Grand Total 1995-2008			**11,940.44**

Region: CWRD - Central and West Asia Department; EARD - East Asia Department; PARD - Pacific Department; PSOD - Private Sector Operations Department; SARD - South Asia Department; SERD - Southeast Asia Department

Sector: AG - Agriculture and natural resource; EN - energy; IN - industry; MS - multisector; WS - water supply, sanitation and waste management

Environmental Subtheme: CEET- cleaner or energy-efficient technology promotion, GREI- global and regional environmental initiatives, NRM- natural resource management, PLIS- environmental policy, legislation, and institutional framework strengthening, UEI- urban environmental improvement

Appendix 2
Technical Assistance and Grants with Environmental Sustainability (ES) as Theme (1995-2008) (ADTA, RETA, PPTA, and Grants)

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2008	7197	BAN	Strengthening the Resilience of the Water Sector in Khulna to Climate Change	ADTA	600,000
2008	7148	IND	Promoting Inclusive Urban Development in Indian Cities	ADTA	1,000,000
2008	7158	NEP	Strengthening Capacity for Managing Climate Change and the Environment	ADTA	500,000
2008	7083	PRC	Urban Wastewater Reuse and Sludge Utilization Policy Study	ADTA	1,000,000
2008	7127	PRC	River Basin Water Resources Allocation and Management Policy	ADTA	750,000
2008	7146	PRC	Capacity Strengthening in Planning and Implementation of Integrated Gasification Combined Cycle Plant	ADTA	200,000
2008	7174	PRC	Transport Efficiency through Logistics Development Policy Study	ADTA	500,000
2008	7191	PRC	Design of the National Sulfur Dioxide Emission Trading System	ADTA	500,000
2008	7202	PRC	Utilization of Foreign Capital to Promote Energy Conservation and Energy-Efficient Power Generation Scheduling	ADTA	1,500,000
2008	7212	PRC	China Clean Development Mechanism Fund Capacity Development	ADTA	800,000
2008	7217	PRC	Preparing National Guidelines for Eco-Compensation in River Basins and a Framework for Soil Pollution Management	ADTA	800,000
2008	7219	PRC	Enabling the Protection of Jiaozhou Bay Water Quality and Wetland Ecosystem	ADTA	750,000
2008	7194	THA	Mainstreaming Energy Efficiency Measures in Thai Municipalities	ADTA	1,000,000
2008	7099	IND	Integrated Renewable Energy Development	PPTA	1,400,000
2008	7106	IND	Bihar Urban Development	PPTA	1,000,000
2008	7132	IND	Integrated Flood and River Erosion Management - Arunachal Pradesh	PPTA	900,000
2008	7136	IND	Integrated Flood and Riverbank Erosion Risk Management - Assam (Phase 2): Processing and Institutional Strengthening	PPTA	900,000
2008	7221	IND	Preparing Nonsovereign Urban Infrastructure Projects	PPTA	1,250,000
2008	7176	NEP	Electricity Connectivity and Energy Efficiency	PPTA	150,000
2008	7182	NEP	Secondary Towns Integrated Urban Environmental Improvement	PPTA	850,000
2008	2060	PAK	Sustainable Energy Efficiency Development Program	PPTA	600,000
2008	7109	PHI	Integrated Natural Resources and Environmental Management Sector Development Program	PPTA	850,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2008	7160	PRC	Guangxi Border Cities Development	PPTA	800,000
2008	7177	PRC	Wuhan Urban Environmental Improvement	PPTA	700,000
2008	7179	PRC	Jiangxi Sustainable Forest Ecosystem Development	PPTA	700,000
2008	7121	SAM	Afulilo Environmental Enhancement	PPTA	1,200,000
2008	7140	SRI	Assessing Colombo Municipality Wastewater Systems	PPTA	150,000
2008	7061	UZB	Water Resources Management Sector	PPTA	1,200,000
2008	7151	VIE	Hai Phong Water Supply	PPTA	1,000,000
2008	6479	REG	Addressing Climate Change in the Asia and Pacific Region	RETA	1,250,000
2008	6510	REG	Capturing and Transferring Air Quality Management Knowledge in Asia	RETA	500,000
2008	6443	REG	Energy for All Initiative	RETA	2,300,000
2008	6442	REG	Implementation of the Seed Capital Assistance Facility	RETA	4,200,000
2008	6457	REG	Improving the Implementation of Environmental Safeguards for ADB Projects in Central and West Asia	RETA	150,000
2008	6498	REG	Knowledge and Innovation Support for ADB's Water Financing Program	RETA	2,000,000
2008	6470	REG	Managing Water in Asia's River Basins: Charting Progress and Facilitating Investment	RETA	2,000,000
2008	6485	REG	Promoting Energy Efficiency in the Pacific	RETA	1,200,000
2008	6496	REG	Regional Partnerships for Climate Change Adaptation and Disaster Preparedness	RETA	1,000,000
2008	6471	REG	Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific (Phase I)	RETA	850,000
2008	6446	REG	Strengthening Sound Environmental Management in the Brunei Darussalam, Indonesia, Malaysia, and Philippines East ASEAN Growth Area	RETA	2,000,000
2008	112	KGZ	Southern Agriculture Area Development	Grants	2,500,000
2008	9117	LAO	Alternative Livelihood for Upland Ethnic Groups in Houaphanh Province	Grants	1,820,000
2008	117	LAO	Greater Mekong Subregion Sustainable Tourism Development	Grants	10,000,000
2008	9121	MON	Community-Based Local Road Upgrading and Maintenance in the Western Region of Mongolia	Grants	2,000,000
2008	9124	MON	Water Point and Extension Station Establishment for Poor Herding Families	Grants	2,000,000
2008	9125	MON	Poverty Reduction Through Community-Based Natural Resource Management	Grants	2,000,000
2008	9127	MON	Energy Conservation and Emissions Reduction from Poor Households	Grants	2,000,000
2008	109	PRC	Capacity Building for Energy Efficiency Implementation	Grants	800,000
2008	113	PRC	Ningxia Integrated Ecosystem and Agricultural Development	Grants	4,545,000
2008	128	PRC	Dryland Sustainable Agriculture Project	Grants	350,000
2008	114	SAM	Sanitation and Drainage	Grants	2,220,000
2008	129	SRI	Dry Zone Urban Water and Sanitation	Grants	25,200,000
2008	9126	TAJ	Community Participatory Flood Management	Grants	3,000,000
2007	4992	IND	Energy Efficiency Enhancement in the Power Generation Sector	ADTA	1,000,000
2007	7016	INO	Capacity Building in Water Resources in a Decentralized Environment	ADTA	850,000
2007	7013	LAO	Updating the National Water Policy and Strategy	ADTA	1,000,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2007	4987	PRC	National Strategies for Environmental Management and Energy Conservation	ADTA	900,000
2007	4935	PRC	Gansu Rural Clean Energy Development	ADTA	800,000
2007	7006	PRC	Development of Biomass Power Generation in Rural Areas	ADTA	600,000
2007	4948	PRC	Promoting Resource Conservation and Energy Efficiency	ADTA	400,000
2007	4975	PRC	Utilization of Renewable Shallow-Ground Geo-Energy	ADTA	150,000
2007	7002	PRC	Urban Wastewater and Solid Waste Management for Small Cities and Towns	ADTA	1,000,000
2007	4967	PRC	Policy Study on Market-Based Instruments for Water Pollution Control	ADTA	500,000
2007	4991	PRC	Transport Information System	ADTA	400,000
2007	7027	PRC	Strengthening the Capacity of the Sanmenxia Municipality Government in Strategic Planning and Management*	ADTA	400,000
2007	7049	PRC	Implementing the National Flood Management Strategy	ADTA	500,000
2007	7021	PRC	Capacity Building for Integrated Ecosystem Management in Ningxia Hui Autonomous Region	ADTA	600,000
2007	4944	SOL	Strengthening Disaster Recovery Planning and Coordination	ADTA	800,000
2007	4966	VIE	Capacity Building on Environmental Management to the Power Sector	ADTA	600,000
2007	7024	VIE	Supporting the Energy Efficiency Program Implementation Project	ADTA	925,000
2007	7041	BAN	Participatory Small-Scale Water Resources Project	PPTA	600,000
2007	7022	COO	Infrastructure Development Project	PPTA	700,000
2007	7014	IND	Inclusive Tourism Infrastructure Development	PPTA	1,000,000
2007	7028	KAZ	Second Water Resources Management and Land Improvement	PPTA	600,000
2007	4924	KGZ	Agricultural Land Improvement	PPTA	700,000
2007	4921	LAO	Cumulative Impact Assessment for the Nam Ngum 3 Hydropower Project	PPTA	983,000
2007	4972	NEP	Improved Water Quality, Sanitation, and Service Delivery in Emerging Towns Sector Development Program	PPTA	720,000
2007	4939	PRC	Integrated Renewable Biomass Energy Development	PPTA	650,000
2007	4951	PRC	Inner Mongolia Autonomous Region Environment Improvement (Phase II)	PPTA	800,000
2007	4959	PRC	Small Cities and Towns Development Demonstration Sector Projects	PPTA	1,700,000
2007	4960	PRC	Guangxi Wouzhou Urban Development	PPTA	500,000
2007	4930	PRC	Xinjiang Urban Transport and Environmental Improvement	PPTA	700,000
2007	4971	PRC	Songhua River Basin Water Pollution Control and Management Project	PPTA	1,300,000
2007	4995	PRC	Lanzhou Sustainable Urban Transport Project	PPTA	800,000
2007	4819	PRC	Energy Conservation and Resource Management (Supplementary)	PPTA	320,000
2007	7015	PRC	Jiangsu Yancheng Wetlands Protection Project	PPTA	650,000
2007	7040	PRC	Silk Road Ecosystem Restoration Project	PPTA	800,000
2007	4596	TAJ	Power Rehabilitation, Phase II	PPTA	11,000
2007	7041	BAN	Participatory Small-Scale Water Resources Project	PPTA	600,000
2007	7022	COO	Infrastructure Development Project	PPTA	700,000
2007	6439	REG	Twelfth Agriculture and Natural Resources Research at International Agricultural Research Centers	RETA	2,000,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2007	6427	REG	A Regional Review of the Economics of Climate Change in Southeast Asia	RETA	904,000
2007	6384	REG	Establishing Renewable Energy, Energy Efficiency, and Greenhouse Gas Mitigation Investment Funds	RETA	150,000
2007	6144	REG	Better Air Quality Management In Asia (Supplementary)	RETA	75,000
2007	6285	REG	Strengthening Country Safeguard Systems (Supplementary)	RETA	100,000
2007	6285	REG	Strengthening Country Safeguard Systems (Second Supplementary)	RETA	70,000
2007	6420	REG	Promoting Climate Change Adaptation in Asia and the Pacific	RETA	3,600,000
2007	6422	REG	Mainstreaming Environment for Poverty Reduction	RETA	2,850,000
2007	6419	REG	Promoting Environmental Compliance and Enforcement in Asia	RETA	150,000
2007	6416	REG	A Development Framework for Sustainable Urban Transport	RETA	500,000
2007	6387	REG	Energy Sector Strategy and Development 2007	RETA	400,000
2007	6438	REG	Implementation of the Technical Support Facility under the Carbon Market Initiative	RETA	4,040,000
2007	6392	REG	Supporting the Implementation of the Energy Efficiency Initiative in Developing Member Countries	RETA	2,300,000
2007	6293	REG	Managing the Cities in Asia (Supplementary)	RETA	5,000,000
2007	6421	REG	Sustainable Urban Development In Asia	RETA	800,000
2007	6441	REG	Efficiency Improvement and Connectivity Strengthening in Archipelagic Southeast Asia	RETA	2,750,000
2007	0092	CAM	Tonle Sap Lowlands Rural Development	Grant	9,900,000
2007	0073	KGZ	Southern Agriculture Area Development	Grant	5,000,000
2007	0086	MON	Community-Based Heating Supply In Rural Remote Areas	Grant	2,000 ,000
2007	0071	PHI	Integrated Coastal Resources Management	Grant	9,000,000
2006	4878	KIR	Integrated Land and Population Development Program on Kiritimati Island	ADTA	630,000
2006	4061	PRC	Songhua River Water Quality and Pollution Management (Supplementary)	ADTA	5,000
2006	4810	PRC	National Strategy for Rural Biomass Renewable Energy Development	ADTA	400,000
2006	4812	PRC	Establishment of the Clean Development Mechanism Fund	ADTA	600,000
2006	4849	PRC	Coal Mine Safety Study	ADTA	600,000
2006	4869	TIM	Dili Water Supply Performance Improvement	ADTA	1,000,000
2006	3528	VIE	Capacity Building for Water Resources Management (Supplementary)	ADTA	150,000
2006	4903	VIE	Viet Nam Water Sector Review	ADTA	580,000
2006	4848	CAM	Water Resource Management (Sector)	PPTA	1,300,000
2006	4896	IND	North Eastern Integrated Flood and Riverbank Erosion Management (Assam)	PPTA	850,000
2006	4361	INO	Urban Air Quality Improvement Sector Development Program (Supplementary)	PPTA	280,000
2006	4381	INO	Integrated Citarum Water Resources Management (Supplementary)	PPTA	275,000
2006	4763	INO	Metropolitan Sanitation Management and Health	PPTA	1,200,000
2006	4875	LAO	Small Towns Water Supply and Sanitation Sector	PPTA	500,000
2006	4802	PAK	Community Water Storage and Irrigated Agriculture Development	PPTA	900,000
2006	4793	PNG	Lae Port Development - Tidal Basin Phase I	PPTA	900,000
2006	4783	PRC	Gansu Heihe Hydropower Development	PPTA	500,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2006	4804	PRC	Jilin Urban Infrastructure	PPTA	500,000
2006	4631	PRC	Dryland Farming in the Northern Region (Supplementary)	PPTA	150,000
2006	4805	PRC	Xinjiang Municipal Infrastructure and Environmental Improvement	PPTA	800,000
2006	4808	PRC	Kunming Qingshuihai Water Supply	PPTA	600,000
2006	4818	PRC	Gansu Baiyin Urban Development	PPTA	500,000
2006	4819	PRC	Energy Conservation and Resource Management	PPTA	300,000
2006	4831	PRC	Henan Ecological Agriculture and Rural Productivity Improvement Project and the Central and Southern Shanxi Integrated Agricultural Development Project	PPTA	1,000,000
2006	4867	PRC	Preparing the Qingdao Water Resources Management	PPTA	600,000
2006	4853	SRI	Small Towns Rural Arid Areas Water and Sanitation	PPTA	870,000
2006	4811	TAJ	Khatlon Province Flood Management	PPTA	500,000
2006	4807	UZB	Djizzak and Surkhandarya Rural Water Supply and Sanitation Sector	PPTA	400,000
2006	4001	VIE	Central Region Water Resources Sector (Supplementary)	PPTA	79,000
2006	4001	VIE	Central Region Water Resources Sector (Second Supplementary in 2006)	PPTA	35,000
2006	4845	VIE	Support for Public-Private Development of the O Mon Thermal Power Complex	PPTA	1,700,000
2006	6261	REG	Energy Efficiency Initiative Consultation Workshop (Supplementary)	RETA	300,000
2006	6291	REG	Rolling Out Air Quality Management in Asia (Supplementary)	RETA	2,430,000
2006	6322	REG	Energy Sector Strategy and Development	RETA	1,000,000
2006	6325	REG	Promoting Effective Water Management Policies and Procedures (Phase 5)	RETA	3,200,000
2006	6327	REG	External Forums for Selected Sectors and Thematic Priorities at the ADB	RETA	400,000
2006	6334	REG	Kyoto Annual Meeting Pre-Event: Asian and Pacific Youth Forum on Sustainable Development	RETA	150,000
2006	6339	REG	Partnership on Persistent Organic Pollutants Pesticides Management for Agricultural Production in Central Asian Countries	RETA	400,000
2006	6350	REG	Sustainable Urban Transport	RETA	1,000,000
2006	6351	REG	Process Development for Preparing and Implementing Integrated Water Resources Management Plans	RETA	1,000,000
2006	6357	REG	Central Asian Countries Initiative for Land Management Multicountry Partnership Framework Support	RETA	4,025,000
2006	6361	REG	Managing Hazardous Wastes	RETA	400,000
2006	6363	REG	Clean Energy Projects Eligible for the Clean Development Mechanism	RETA	840,000
2006	6371	REG	Mitigation of Transboundary Air Pollution from Coal-Fired Power Plants in Northeast Asia	RETA	900,000
2006	6376	REG	Eleventh Agriculture and Natural Resources Research at International Agricultural Research Centers	RETA	1,000,000
2005	4276	AZE	Renewable Energy Development	ADTA	700,000
2005	4562	BAN	Early Warning Systems Study (piggy-backed to loan)	ADTA	250,000
2005	4636	BHU	Capacity Building to Implement Environmental Assessment Procedures Project	ADTA	200,000
2005	4669	CAM	Study of the Influence of Built Structures on the Fisheries of the Tonle Sap	ADTA	765,000
2005	4605	COO	Strengthening Disaster Management and Mitigation	ADTA	600,000
2005	4630	IND	Uttaranchal Power Sector Capacity Building	ADTA	500,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2005	4692	IND	Integrated Coastal Management and Related Investment Development	ADTA	250,000
2005	4687	INO	Natural Resources Management in a Decentralized Framework	ADTA	600,000
2005	4408	KGZ	A Study of the Impact of Land Reform on Agriculture, Poverty Reduction, and Environment (supplementary)	ADTA	130,000
2005	4434	LAO	Poverty Reduction through Land Tenure Consolidation, Participatory Natural Resources Management, and Local Communities Skills Building Project W/ ES	ADTA	124,300
2005	4614	MLD	Promoting Sound Environmental Management in the Aftemath of the Tsunami Disaster	ADTA	400,000
2005	4708	PHI	Aquaculture Development for Poverty Reduction	ADTA	500,000
2005	4649	PRC	Alternative Energy Supply for Rural Poor in Remote Areas	ADTA	500,000
2005	4706	PRC	Energy Conservation and Resource Management Project	ADTA	600,000
2005	4810	PRC	National Strategy for Rural Biomass Renewable Energy Development	ADTA	400,000
2005	4741	PRC	Institutional Development of SEPA's Regional Supervision Centers	ADTA	550,000
2005	4641	PRC	Country Environmental Analysis	ADTA	150,000
2005	4702	PRC	Study on Sustainable Urbanization in Metropolitan Regions	ADTA	500,000
2005	4653	RMI	Increasing Ownership and Effective Demand for Improved Urban Waste Management	ADTA	300,000
2005	4736	SRI	Capacity Building of the Environmental and Social Division of the Road Development Authority	ADTA	400,000
2005	4667	THA	Capacity Building for Pollution Taxation and Resource Mobilization for Environment and Natural Resources	ADTA	225,000
2005	4695	THA	Supporting Post-Tsunami Activities and Coastal Zone Management in Thailand	ADTA	150,000
2005	4613	THA	Subregional Development Plan for the Tsunami Affected Andaman Region	ADTA	1,750,000
2005	4713	VIE	Capacity Building in Strategic Environmental Assessment of Hydropower Sector	ADTA	475,000
2005	4711	VIE	Implementation of the Environmental Management Plan for the Son La Hydropower Project	ADTA	800,000
2005	3528	VIE	Capacity Building for Water Resources Management (Supplementary)	ADTA	500,000
2005	4714	VIE	Air Pollution, Poverty, and Health Effects in HCMC	ADTA	600,000
2005	34	CAM	Tonle Sap Sustainable Livelihoods	Grant	15,000,000
2005	35	CAM	Tonle Sap Sustainable Livelihoods	Grant	4,738,000
2005	9072	INO	Sustainable Livelihood Development for Coastal Communities in the Special Province of Naggroe Aceh Darussal	Grant	2,500,000
2005	9073	INO	Rehabilitation of Coral Reef and Mangrove Resources in the Special Province of Naggroe Aceh Darullal	Grant	1,500,000
2005	9062	LAO	Sustainable Agroforestry System for Livelihood Enhancement of the Rural Poor	Grant	1,500,000
2005	4571	PRC	Sanjiang Plain Wetlands Protection (EGEF)	Grant	12,140,000
2005	6 / 11	SRI	Tsunami-Affected Areas Rebuilding Project	Grant	53,200,000
2005	7 / 13	SRI	Northeast Community Restoration and Development Project II	Grant	5,900,000
2005	4666	AFG	Natural Gas Development Project	PPTA	995,000
2005	4726	AZE	Renewable Energy Development	PPTA	700,000
2005	4756	CAM	Tonle Sap Lowland Stabilization	PPTA	1,000,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2005	4570	CAM	Sustainable Rural Water Supply and Sanitation (formerly Rural Water Supply and Sanitation)	PPTA	150,000
2005	4654	KAZ	Second Rural Water Supply and Sanitation Sector	PPTA	650,000
2005	4642	PAK	Punjab Irrigated Agriculture Development Sector Project	PPTA	1,242,000
2005	4098	PAK	Rawalpindi Environmental Improvement (Supplementary)	PPTA	70,000
2005	4584	PRC	Inner Mongolia Autonomous Region Environmental Improvement Project	PPTA	500,000
2005	4631	PRC	Dryland Farming in the Northern Region	PPTA	400,000
2005	4640	PRC	Ningxia Yinchuan Integrated Ecosystem Management	PPTA	850,000
2005	4721	PRC	Shaanxi-Qinling Mountains Integrated Ecosystem Management Project	PPTA	500,000
2005	4629	PRC	Integrated Ecosystem Management and Environmental Protection of the Baiyangdian Lake Catchment Project	PPTA	500,000
2005	4628	PRC	Hefei Urban Environment Improvement Project	PPTA	750,000
2005	4617	PRC	Nanjing Quinhai River Environmental Improvement Project	PPTA	600,000
2005	4646	TIM	Urban Water Supply and Sanitation	PPTA	600,000
2005	4709	UZB	Rural Renewable Energy	PPTA	300,000
2005	4625	VIE	Song Bung 4 Hydropower Project Phase II	PPTA	1,575,000
2005	6144	REG	Better Air Quality Management in Asia	RETA	390,000
2005	6234	REG	Regional Asian Environmental Compliance and Enforcement Network (AECEN)	RETA	730,000
2005	6236	REG	Central Asian Countries Initiative for Land Management	RETA	1,250,000
2005	6263	REG	Establishment of the GMS Environment Operations Center	RETA	150,000
2005	6285	REG	Strengthening Country Safeguard Systems	RETA	800,000
2005	6286	REG	Capacity Building of Private Sector Financial Institutions in Meeting Environmental and Social Challenges	RETA	150,000
2005	6289	REG	Core Environment Program and Biodiversity Conservation Corridors Initiative in the GMS	RETA	24,970,000
2005	6291	REG	Rolling Out Air Quality Management in Asia	RETA	655,000
2005	6292	REG	Promoting Environmental Investment in Asia and the Pacific	RETA	400,000
2005	6293	REG	Managing the Cities in Asia	RETA	980,000
2004	4541	AFG	Natural Resources Management and Environmental Protection Project/ Alleviation of Poverty in Buffer Zone	ADTA	1,785,000
2004	4415	AFG	Kabul Air Quality Management	ADTA	450,000
2004	4465	AZE	Institutional Strengthening of the Water Supply and Sanitation Sector in Secondary Towns	ADTA	500,000
2004	4446	BAN	Support to the Roads and Highways Department for Safeguard Policy Compliance	ADTA	500,000
2004	4376	CAM	Capacity Building for the Tonle Sap Poverty Reduction Initiative	ADTA	500,000
2004	4427	CAM	Establishment of the Tonle Sap Basin Management Organization II	ADTA	300,000
2004	4426	FSM	Public Utilities Corporate Governance	ADTA	400,000
2004	4496	IND	Capacity Building for the Clean Development Mechanism in India	ADTA	700,000
2004	4333	INO	Gas Generation from Waste	ADTA	500,000
2004	4501	INO	Institutionalizing the Clean Development Mechanism	ADTA	750,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2004	4551	INO	Marine and Fisheries Sector Strategy Study	ADTA	880,000
2004	4375	KAZ	Environmental Monitoring and Information Management System for Sustainable Land Use	ADTA	600,000
2004	4408	KGZ	A Study of the Impact of Land Reform on Agriculture, Poverty Reduction, and Environment (Supplementary)	ADTA	400,000
2004	4434	LAO	Poverty Reduction through Land Tenure Consolidation, Participatory Natural Resources Management, and Local Communities Skills-Building Project	ADTA	850,000
2004	4432	PAK	Capacity Building for Environmental Management In Sindh	ADTA	400,000
2004	4500	PAK	Capacity Building for Alternative Energy Development Board	ADTA	150,000
2004	4552	PHI	Master Plan for the Agusan River Basin	ADTA	970,000
2004	4389	PRC	Waste Coal Utilization Study	ADTA	400,000
2004	4553	PRC	Support for Environmental Legislation	ADTA	400,000
2004	4327	PRC	Flood Management Strategy Study (no classification)	ADTA	500,000
2004	4358	PRC	Capacity Building to Combat Land Degradation	ADTA	1,000,000
2004	4404	PRC	Implementation of the National Strategy for Soil and Water Conservation	ADTA	379,000
2004	4447	PRC	Evaluation of Environmental Policy and Investment for Water Pollution Control in the Huai River Basin	ADTA	500,000
2004	4472	TAJ	Support for Monitoring Policy Reforms and Improving Farm and Water Management	ADTA	500,000
2004	3528	VIE	Capacity Building for Water Resources Management (Supplementary)	ADTA	360,000
2004	9060	AFG	Balkh River Basin Water Resources Management	Grant	10,000,000
2004	9049	INO	Sustainable Livelihood Development for the Poor Coastal and Small Island Communities Project	Grant	1,500,000
2004	9055	KGZ	Reducing Vulnerability of the Poor to Natural Disasters	Grant	1,000,000
2004	4357	PRC	Capacity Building to Combat Land Degradation	Grant	7,700,000
2004	9054	UZB	Affordable Services and Water Conservation for the Urban Poor	Grant	1,500,000
2004	9058	VIE	Expanding Benefits for the Poor through Urban Environmental Improvements	Grant	1,000,000
2004	4420	AFG	Western Basins Water Resources Management and Irrigated Agriculture Development Project	PPTA	1,960,000
2004	4535	BAN	Secondary Towns Water Supply and Sanitation	PPTA	800,000
2004	4533	BHU	Urban Infrastructure Development	PPTA	600,000
2004	3997	CAM	Chong Kneas Environmental Improvement (Supplementary)	PPTA	113,000
2004	4373	INO	Integrated Coastal Fisheries Resource Management	PPTA	790,000
2004	4381	INO	Integrated Citarum Water Resources Management	PPTA	1,000,000
2004	4411	INO	Water Supply and Sanitation Project	PPTA	900,000
2004	4361	INO	Urban Air Quality Improvement SDP	PPTA	700,000
2004	4438	KYG	Second Agriculture Area Development	PPTA	800,000
2004	4377	LAO	Northern and Central Region Water Supply and Urban Development Project	PPTA	200,000
2004	4419	LAO	Preparing the Forest Plantations Sector Project	PPTA	150,000
2004	4419	LAO	Preparing the Forest Plantations Sector Project (Supplementary)	PPTA	120,000
2004	4425	PAK	Renewable Energy Development	PPTA	550,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2004	4367	PAK	Balochistan Rural Development and Drought Mitigation	PPTA	600,000
2004	4525	PAK	Sindh Coastal and Inland Community Development	PPTA	650,000
2004	4534	PAK	Sindh Basic Urban Services	PPTA	795,000
2004	4324	PRC	Hunan Flood Management	PPTA	700,000
2004	4436	PRC	Wuhan Wastewater and Stormwater Management Project	PPTA	700,000
2004	4385	PRC	Guangxi Nanning Urban Infrastructure Development	PPTA	560,000
2004	3998	PRC	Sanjiang Plains Wetland Protection Project (Supplementary)	PPTA	115,000
2004	4531	SRI	Greater Colombo Wastewater Management Project	PPTA	850,000
2004	4343	UZB	Land Improvement	PPTA	500,000
2004	6016	REG	Clean Air Initiative for Asian Cities (Supplementary)	RETA	466,500
2004	6144	REG	Better Air Quality Management in Asia (Supplementary)	RETA	245,000
2004	6180	REG	Preparation of Asian Environment Outlook 2005	RETA	400,000
2004	6198	REG	Capacity Building for Promoting Sustainable Development in the Greater Mekong Subregion	RETA	500,000
2004	6204	REG	Mainstreaming Environmental Consideration in Economic and Development Planning Processes in Selected PDMCs	RETA	600,000
2004	6208	REG	Ninth Agriculture and Natural Resources Research at International Agricultural Research Centers	RETA	300,000
2004	6213	REG	GMS Biodiversity Conservation Corridor Initiative	RETA	400,000
2004	6219	REG	Promoting Effective Water Management Policies and Practices (Phase 4)	RETA	5,600,000
2003	4170	BAN	Arsenic Mitigation Review and Strategy Formulation	ADTA	120,000
2003	4120	BHU	Strengthening Environmental Sector Capacity	ADTA	150,000
2003	4273	COO	Legal and Institutional Strengthening of Environmental Management	ADTA	350,000
2003	4270	FIJ	Capacity Building in Water and Sewerage Services	ADTA	783,000
2003	4137	INO	Carbon Sequestration Through CDM in Indonesia	ADTA	700,000
2003	4186	KAZ	Institutional Strengthening for Rural Water Supply and Sanitation Services	ADTA	350,000
2003	4257	KIR	Supporting Land Use Management on Kirimati Island	ADTA	300,000
2003	4193	PAK	Industrial Environmental Management Capacity Building	ADTA	1,000,000
2003	4174	PHI	Rehabilitation and Renewable Energy Projects for Rural Electrification and Livelihood	ADTA	450,000
2003	4309	PRC	Renewable Energy for Poverty Reduction	ADTA	600,000
2003	4307	PRC	Poverty Reduction in Key Forestry Conservation Programs	ADTA	400,000
2003	4308	PRC	Poverty Reduction in Grassland Improvement Program	ADTA	400,000
2003	4215	PRC	Safe Drinking Water and Sanitation for the Rural Poor	ADTA	400,000
2003	4229	SAM	Institutional Strengthening for Drainage and Wastewater Management	ADTA	400,000
2003	4184	SRI	Greater Colombo Waste Water Management Sector Review	ADTA	150,000
2003	4231	TAJ	Institutional Development for Improved Environmental Strategic Planning and Policy	ADTA	220,000
2003	4254	THA	Capacity Building for Pollution Taxation and Resource Mobilization for Environmental and Natural Resources Sectors	ADTA	600,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2003	4214	TUV	Effective Waste Management and Recycling Project	ADTA	150,000
2003	4173	UZB	Off-Grid Renewable Energy Development	ADTA	350,000
2003	9035	LAO	Solid Waste Management and Income Generation for Vientiane's Poor	Grant	1,000,000
2003	4197	CAM	Tonle Sap Sustainable Livelihoods Project	PPTA	1,260,000
2003	4182	IND	Urban Clean Fuel Project	PPTA	995,000
2003	4148	INO	Sustainable Agriculture Development for Food Security and Poverty Reduction	PPTA	800,000
2003	4098	PAK	Rawalpindi Environmental Improvement	PPTA	350,000
2003	4223	PRC	Shandong Hai River Basin Pollution Control Project	PPTA	600,000
2003	4227	PRC	Jilin Water Supply and Sewerage Development	PPTA	650,000
2003	4233	PRC	Henan Wastewater Management Project	PPTA	800,000
2003	4143	TAJ	Water Resources Development and Rehabilitation	PPTA	600,000
2003	6016	REG	Clean Air Initiative for Asian Cities	RETA	412,000
2003	6093	REG	Promoting Effective Water Management Policies and Practices, Phase 2	RETA	1,000,000
2003	6095	REG	Integrating Environmental Consideration into Development Policies, Plans, and Programs for CARs, Azerbaijan	RETA	550,000
2003	6099	REG	Management Issues in Central Asia	RETA	150,000
2003	6102	REG	Renewable Energy and Energy Efficiency Program for the Pacific (REEP)	RETA	600,000
2003	6115	REG	Poverty Reduction in Upland Communities in the Mekong Region through Improved Community and Industrial Forestry	RETA	800,000
2003	6125	REG	Forests and Climate Change: Preparing for Decisions on Land use and Forestry at COP 9	RETA	20,000
2003	6144	REG	Better Air Quality Management in Asia	RETA	300,000
2003	6149	REG	Support for the Mekong River Commission Flood Management and Mitigation Program	RETA	1,000,000
2003	6150	REG	Poverty and Environment Program	RETA	3,920,000
2003	6155	REG	Capacity Building in Environmental Information Management Systems in Central Asia	RETA	800,000
2003	6159	REG	Regional Air Quality Management	RETA	400,000
2003	6163	REG	Improved Management of Shared Water Resources in Central Asia	RETA	700,000
2002	3837	INO	Improving the Environmental Performance of Small and Medium Enterprises by Promoting Cleaner Production	ADTA	500,000
2002	3965	MON	Renewable Energy Development in Small Towns and Rural Areas	ADTA	400,000
2002	3944	PAK	Industrial Environmental Management	ADTA	700,000
2002	3921	PHI	Promotion of Cleaner Production Technologies	ADTA	775,000
2002	3848	PHI	Metro Manila Solid Waste Management	ADTA	1,250,000
2002	3840	PRC	Opportunities for the Clean Development Mechanism in the Energy Sector	ADTA	775,000
2002	4061	PRC	Songhua River Basin Water Quality and Pollution Control Management	ADTA	1,000,000
2002	3891	PRC	Study on Control and Management of Non-Point Source Pollution	ADTA	600,000
2002	4049	SRI	Strengthening the Regulatory Framework for Water Supply and Sanitation	ADTA	285,000
2002	3981	TAJ	Development of an Energy Conservation Program	ADTA	120,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2002	3986	TIM	Integrated Water Resources Management	ADTA	600,000
2002	9023	CAM	Income for the Poor through Community-Based Environmental Improvements in Phnom Penh	Grant	1,000,000
2002	3945	PRC	Efficient Utilization of Agricultural Wastes	Grant	6,360,000
2002	3998	PRC	Sanjiang Plains Wetland Protection (GEF-financed)	Grant	12,760,000
2002	3892	VIE	Second Red River Basin Sector	Grant	10,600,000
2002	3854	CAM	Environmental Assessment for the GMS Cambodia Road Improvement Project	PPTA	60,000
2002	3997	CAM	Chong Kneas Environmental Improvement	PPTA	997,000
2002	3885	IND	Energy Efficiency Enhancement	PPTA	600,000
2002	3916	IND	Environmental Analysis for the Rural Roads Sector Development	PPTA	100,000
2002	3977	INO	Community-Based Land Rehabilitation and Management	PPTA	800,000
2002	4026	INO	Clean Vehicle Fuel for Blue Skies	PPTA	600,000
2002	3903	LAO	Northern and Central Regions Water Supply and Sanitation Sector	PPTA	700,000
2002	3844	NEP	Community-Based Water Supply and Sanitation Project	PPTA	750,000
2002	3862	PAK	Punjab Community Water Supply and Sanitation	PPTA	125,000
2002	3081	PRC	Coalbed Methane Demonstration Project (Supplementary)	PPTA	398,000
2002	3638	PRC	Wuhan Wastewater Treatment - Supplementary	PPTA	199,000
2002	3863	PRC	Mudanjiang Water Supply	PPTA	150,000
2002	3919	PRC	Liaoning Environmental Improvement	PPTA	500,000
2002	4014	PRC	Fuzhou Environmental Improvement Project	PPTA	600,000
2002	3985	SAM	Preparing the Savaii Renewable Energy Project	PPTA	300,000
2002	4059	SRI	Delivering Natural Resource and Environmental Management Services	PPTA	800,000
2002	6031	REG	Promotion of Effective Water Management Policies and Practices	RETA	4,000,000
2002	6039	REG	Pacific Region Environmental Strategy	RETA	400,000
2002	6064	REG	Climate Change Adaptation for the Pacific Islands	RETA	800,000
2002	6068	REG	Prevention and Control of Dust and Sandstorms in Northeast Asia	RETA	1,000,000
2002	6069	REG	National Performance Assessment and Subregional Strategic Environment Framework in the GMS	RETA	1,600,000
2001	3784	IND	Conservation and Livelihood Improvement in the Indian Sundarbans	ADTA	450,000
2001	3761	INO	Regulatory Framework for Private and Public Water Supply and Wastewater Enterprises	ADTA	790,000
2001	3647	KAZ	Technology and Institutional Development for Sustainable Locust Management	ADTA	700,000
2001	3746	LAO	Capacity Building for Environment and Social Management in Energy and Transport	ADTA	600,000
2001	3700	NEP	Optimizing Water Use in Kathmandu Valley	ADTA	775,000
2001	3675	PAK	Environmental Assessment	ADTA	50,000
2001	3663	PRC	Optimizing Initiatives to Combat Desertification in Gansu Province	ADTA	610,000
2001	3657	PRC	PRC-GEF Partnership on Land Degradation in Dryland Ecosystems	ADTA	1,150,000
2001	3821	PRC	Nature Reserve Management Plan in Guangxi Zhuang Autonomous Region	ADTA	100,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2001	3749	PRC	National Guidelines for Urban Wastewater Tariffs and Management Study	ADTA	700,000
2001	3808	SAM	Strengthening Energy Loss Reduction and Maintenance Management Capacity of the Electric Power Corporation	ADTA	150,000
2001	3624	SRI	Integrating Cleaner Production into Industrial Development	ADTA	800,000
2001	3637	THA	Independent Review of Samut Prakarn Wastewater Management Project	ADTA	150,000
2001	3706	UZB	Institutional Support for Sustainable Agricultural Development	ADTA	600,000
2001	3729	UZB	Capacity Building for Urban Water Supply	ADTA	600,000
2001	3683	BAN	Second Small-Scale Water Resources Development Sector	Grant	24,300,000
2001	9009	BAN	Supporting Livelihood Improvement for the Poor through Water Management Associations	Grant	900,000
2001	3519	SRI	Protected Area Management and Wildlife Conservation	Grant	9,000,000
2001	3778	SRI	Protected Area Management and Wildlife Conservation	Grant	4,000,000
2001	3659	BAN	Jamuna-Meghna River Erosion Mitigation	PPTA	1,000,000
2001	3715	IND	Madhya Pradesh Integrated Water Resources Management Strategy	PPTA	600,000
2001	3794	LAO	Tree Plantation for Livelihood Improvement	PPTA	700,000
2001	3692	PHI	Integrated Coastal Resource Management	PPTA	933,000
2001	3376	PRC	Songhua River Flood, Wetland, and Biodiversity Management	PPTA	250,000
2001	3638	PRC	Wuhan Wastewater Treatment	PPTA	500,000
2001	3639	SRI	Aquatic Resources Development and Quality Improvement	PPTA	800,000
2001	3818	VIE	Forests for Livelihood Improvement in the Central Highlands Project	PPTA	1,560,000
2001	5972	REG	Promotion of Renewable Energy, Energy Efficiency, and Greenhouse Gas Abatement Projects	RETA	5,000,000
2001	5973	REG	MFI Environmental Group Meeting	RETA	25,000
2001	5974	REG	Coastal and Marine Resources Management and Poverty Reduction in South Asia	RETA	600,000
2001	5996	REG	Ten Years After Rio: Promoting Subregional Cooperation for Sustainable Development	RETA	200,000
2001	6005	REG	Sixth Agriculture and Natural Resources Research at CGIAR Centers	RETA	4,000,000
2001	6016	REG	Clean Air Initiative for Asian Cities	RETA	150,000
2000	3423	IND	Environmental Management at the State Level	ADTA	3,620,000
2000	3499	KGZ	Environmental Monitoring and Management Capacity Building II	ADTA	650,000
2000	3557	LAO	Strengthening Social and Environmental Management Capacity in the Department of Roads	ADTA	200,000
2000	3393	PHI	Implementation of the Convention on Biological Diversity	ADTA	120,000
2000	3469	PHI	Capacity Building Support for Pasig River Environmental Management and Rehabilitation	ADTA	630,000
2000	3588	PRC	Transjurisdiction Environmental Management	ADTA	2,100,000
2000	3497	PRC	GEF Program Approach to Land Degradation	ADTA	100,000
2000	3548	PRC	National Strategies for Soil and Water Conservation	ADTA	800,000
2000	3447	PRC	Strengthening Urban Solid Waste Management	ADTA	600,000
2000	3522	RMI	Community-Based Coastal Marine Resources Development	ADTA	298,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
2000	3614	TAJ	Capacity Building for Environmental Assessment and Monitoring	ADTA	600,000
2000	3583	THA	Mae Moh Environmental Evaluation	ADTA	500,000
2000	3561	THA	Capacity Building for Regional Environmental Management	ADTA	900,000
2000	3517	THA	Community Assessment and Development for the Samut Prakarn Wastewater Management	ADTA	150,000
2000	3501	TIM	Environmental Assessment Capacity Improvement	ADTA	250,000
2000	3528	VIE	Capacity Building for Water Resources Management (TA Cluster)	ADTA	3,800,000
2000	9001	PHI	Supporting the Sustainable Livelihood for the Poor in Southern Philippines	Grant	2,800,000
2000	9003	PHI	On-Site Urban Upgrading for Vulnerable Slum Communities of Payatas	Grant	1,000,000
2000	9004	PHI	Off-Site and Off-City Relocation of Vulnerable Slum Communities of Muntinlupa City	Grant	1,000,000
2000	9002	PNG	Low-Cost Sanitation, Community Awareness, and Health Education Program	Grant	1,740,000
2000	3605	PRC	Wind Power Development	Grant	6,000,000
2000	3477	SRI	Coastal Resource Management	Grant	12,760,000
2000	3539	IND	Resettlement and Environmental Assessment for the West Bengal Corridor Development	PPTA	150,000
2000	3442	KAZ	Locust Management Project	PPTA	100,000
2000	3572	KAZ	Rural Water Supply Sector	PPTA	600,000
2000	3535	LAO	Energy and Transport Socio-Environmental Management	PPTA	150,000
2000	3544	LAO	Nam Ngum River Basin Development	PPTA	850,000
2000	3604	PNG	Coastal Fisheries Management and Development	PPTA	340,000
2000	3462	PRC	Acid Rain Control and Environmental Improvement	PPTA	964,000
2000	3488	PRC	Hebei Province Wastewater Treatment	PPTA	850,000
2000	3551	PRC	Fujian Soil Conservation and Rural Development, Phase II	PPTA	650,000
2000	3571	PRC	Harbin Water Supply	PPTA	720,000
2000	3570	THA	Solid Waste Management Sector	PPTA	1,250,000
2000	5913	REG	Capacity Building to Promote Traditional Environmental Management in the Pacific DMCs	RETA	300,000
2000	5918	REG	Study on Potential Use of Biotechnology in Reducing Poverty and Achieving Food Security in Asia	RETA	140,000
2000	5934	REG	Regional Environmental Action Plan in Central Asia	RETA	500,000
2000	5937	REG	Action Plans for Reducing Vehicle Emissions	RETA	900,000
2000	5939	REG	Strategies for Poverty Reduction through Urban Environmental Improvement	RETA	500,000
2000	5941	REG	Combating Desertification in Asia	RETA	450,000
2000	5945	REG	Fifth Agriculture and Natural Resources Research at CGIAR Centers	RETA	5,800,000
1999	3269	BAN	Bangladesh Environment Operations Strategy	ADTA	99,000
1999	3297	BAN	Urban Transport and Environment Improvement Study	ADTA	645,000
1999	3379	IND	Strengthening Disaster Mitigation and Management at the State Level	ADTA	1,000,000
1999	3324	IND	Community Participation in Urban Environmental Improvement	ADTA	150,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
1999	3252	INO	Capacity Building for Decentralization of the Environmental Impact Assessment Process	ADTA	420,000
1999	3384	INO	Sustainable Management for Tree Crops Development	ADTA	950,000
1999	3350	KAZ	Strengthening Environmental Management	ADTA	700,000
1999	3383	PAK	Integrated Pest Management	ADTA	500,000
1999	3290	PRC	Capacity Building in Ministerial Status Responsibilities in the SEPA	ADTA	810,000
1999	3211	PRC	Improving Environmental Management in Suzhou Creek	ADTA	840,000
1999	3325	PRC	Shanxi Air Quality Improvement	ADTA	700,000
1999	3271	SRI	Sustainable Natural Resource Management for Development	ADTA	800,000
1999	3274	SRI	Cost Recovery Mechanism Analysis for Coastal Zone Protection	ADTA	150,000
1999	3255	VIE	Study on the Policy and Institutional Framework for Forest Resources Management	ADTA	470,000
1999	3300	BAN	Sundarbans Biodiversity Conservation	Grant	3,500,000
1999	3234	INO	Natural Resources and Environmental Management Sector	PPTA	380,000
1999	3364	NEP	Urban Environmental Improvement	PPTA	750,000
1999	3282	PHI	Community-Based Forest Resources Management	PPTA	840,000
1999	3216	PRC	Tianjin Wastewater Treatment and Water Resources Protection	PPTA	800,000
1999	3372	PRC	Yunnan Comprehensive Agricultural Development and Biodiversity Conservation	PPTA	1,332,000
1999	3376	PRC	Songhua River Flood, Wetland, and Biodiversity Management	PPTA	1,545,000
1999	3277	SOL	Marine Biodiversity Conservation	PPTA	150,000
1999	3273	SRI	Protected Area Development and Wildlife	PPTA	330,000
1999	5840	REG	Promotion of Cleaner Production Policies and Practices in Selected DMCs	RETA	600,000
1999	5844	REG	Promoting Sustainable Development Agenda in Asia: Ministerial Conference 2000	RETA	600,000
1999	5860	REG	Institutional Strengthening and Collection of Environment Statistics	RETA	500,000
1999	5861	REG	Capacity Building for Implementation of the Kyoto Protocol and the Clean Development Mechanism	RETA	200,000
1999	5865	REG	Transboundary Environmental Cooperation in Northeast Asia	RETA	350,000
1999	5866	REG	Fourth Agriculture and Natural Resources Research at CGIAR Centers	RETA	5,600,000
1999	5867	REG	Water Resources Management in Southeast Asia (Phase 2)	RETA	250,000
1999	5888	REG	Third ADB-NGO Consultative Meeting on Environment and Sustainable Development	RETA	150,000
1999	5896	REG	Strengthening the Live Reef Fish Trade Management in the PDMCs	RETA	215,000
1999	5899	REG	Subregional Environmental Monitoring and Information System (Phase II)	RETA	600,000
1999	5900	REG	Regional Study on Forest Policy and Institutional Reforms	RETA	595,000
1998	3133	LAO	Strengthening Social and Environmental Management	ADTA	950,000
1998	3079	PRC	TA Cluster to the PRC for the Promotion of Clean Technology	ADTA	3,500,000
1998	3123	PRC	Provincial Legislation on Environmental Protection and Natural Resources Conservation	ADTA	300,000
1998	3069	PRC	Soil and Water Conservation in the Upper Yangtze River Basin	ADTA	99,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
1998	3095	PRC	Hai River Basin Wastewater Management and Pollution Control	ADTA	570,000
1998	3139	PRC	Policies and Strategies for Sustainable Development of the Lancang River Basin	ADTA	660,000
1998	3044	SAM	Evaluation of Sewage Treatment Options	ADTA	115,000
1998	3013	THA	Promotion of Market-Based Instruments for Environmental Management	ADTA	605,000
1998	3152	CAM	Sustainable Forest Management	PPTA	980,000
1998	3089	IND	Calcutta Environmental Improvement	PPTA	1,000,000
1998	3121	NEP	Watershed Rehabilitation and Management	PPTA	750,000
1998	3018	PNG	Social and Environmental Studies	PPTA	150,000
1998	2675	PRC	Market-Based Energy Conservation & Environmental Improvement (Suppl.)	PPTA	150,000
1998	3025	PRC	Suzhou Creek Environmental Rehabilitation	PPTA	965,000
1998	3036	PRC	Power Rehabilitation and Environmental Improvement	PPTA	1,000,000
1998	3039	PRC	Yunnan Road Environmental and Social Analysis	PPTA	150,000
1998	3047	SRI	Forest Resource Management	PPTA	800,000
1998	5772	REG	Regional Training Course on Solid Waste Management in DMCs	RETA	75,000
1998	5778	REG	Strengthening the Capacity of the ASEAN to Prevent and Mitigate Transboundary Atmospheric Pollution	RETA	1,000,000
1998	5783	REG	Strategic Environmental Framework for the Greater Mekong Subregion	RETA	1,600,000
1998	5784	REG	Appropriate Technology for Soil-Conserving Farming Systems (Phase I)	RETA	600,000
1998	5797	REG	Training of Journalists in Management of Environmental Information Resources	RETA	40,000
1998	5800	REG	Measurement of Environmental Performance	RETA	441,000
1998	5826	REG	Asian Environmental Outlook	RETA	700,000
1998	5822	REG	Protection and Management of Critical Wetlands in the Lower Mekong Basin	RETA	1,650,000
1998	5816	REG	Mayors' Asia-Pacific Environmental Summit	RETA	85,000
1997	2805	INO	Strengthening of Urban Waste Management Policies and Strategies	ADOA	600,000
1997	2946	KAZ	Institutional Dev of Policy Reforms for Improving Water Management	ADTA	600,000
1997	2934	KGZ	Environmental Monitoring and Management Capacity Building	ADTA	598,000
1997	2458	MON	Strengthening Land Use Policies (Supplementary)	ADTA	244,000
1997	2847	NEP	Institutional Strengthening of the Ministry of Population and Environment	ADTA	600,000
1997	2808	NEP	Implementation of the Pesticides Regulatory Framework	ADTA	100,000
1997	2916	PHI	Water Supply and Sanitation Sector Plan Study	ADTA	600,000
1997	2792	PRC	Study on Clean Coal Integrated Gasification Combined Cycle Technology	ADTA	500,000
1997	2873	PRC	Improvement of Environmental Management in Shaanxi Province	ADTA	935,000
1997	2975	PRC	EIA and Environmental Management Curriculum Development	ADTA	600,000
1997	2951	PRC	Promotion of Market-Based Instruments for Environmental Management	ADTA	697,000
1997	4813	PRC	Strengthening Flood Management Sustainability in Hunan Province	ADTA	400,000
1997	2751	PRC	Capacity Building of Wastewater Treatment Operations in Anhui Province	ADTA	400,000
1997	2906	PRC	Leadership Training on Urban Environmental Management in Key Cities	ADTA	600,000
1997	2854	RMI	Fisheries Management	ADTA	598,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
1997	2765	SRI	Institutional Strengthening for Environmental Impact Assessment	ADTA	600,000
1997	2820	THA	Capacity Building for Waste Management Program Administration	ADTA	300,000
1997	2859	UZB	Strengthening of Institutions Involved in Environmental Protection	ADTA	675,000
1997	2871	VIE	Red River Basin Water Resources Management	ADTA	1,362,663
1997	2852	VIE	Forestry Sector	Grant	7,000,000
1997	2806	IND	Karnataka Coastal Environmental Management and Urban Development	PPTA	800,000
1997	2936	IND	Urban and Environmental Infrastructure Fund	PPTA	400,000
1997	2822	INO	National Biodiversity Information Network	PPTA	700,000
1997	2958	INO	Marine Resources Evaluation Management and Planning	PPTA	970,000
1997	2856	MAL	Industrial Pollution Control Management	PPTA	588,000
1997	2928	PAK	Quetta Water Supply and Environment Improvement	PPTA	900,000
1997	2803	PHI	Pasig River Environmental Management and Rehabilitation	PPTA	800,000
1997	2835	PHI	Metro Manila Air Quality Improvement	PPTA	260,000
1997	2770	PRC	Fuzhou Water Supply and Wastewater Treatment	PPTA	598,000
1997	2870	PRC	Capacity Building for Energy Conservation	PPTA	78,000
1997	2900	PRC	Financing Mechanism for Energy Efficiency Investment	PPTA	150,000
1997	2901	PRC	Shanxi Environment Improvement	PPTA	590,000
1997	2942	SRI	Biodiversity Conservation	PPTA	800,000
1997	2859	UZB	Strengthening of Institutions Engaged in Environmental Protection	PPTA	675,000
1997	2790	VIE	Ho Chi Minh City Environmental Improvement	PPTA	600,000
1997	5595	REG	Regional Community Forestry Training Center in Kasetsart University (Supplementary)	RETA	1,400,000
1997	5727	REG	Multilateral Financial Institutions Environmental Group Meeting	RETA	52,000
1996	2531	BHU	Strengthening EIA Capabilities and Preparation of Environmental Guidelines	ADTA	350,000
1996	2723	CAM	Institutional Strengthening and Expanding EIA Capacity	ADTA	600,000
1996	2665	INO	Institutional Strengthening of the Forestry and Soil Conservation Services in the Segara Anakan Basin	ADTA	250,000
1996	2641	KIR	Environmental Improvement	ADTA	72,500
1996	2734	LAO	Nam Ngum Watershed Management	ADTA	1,200,000
1996	2613	NEP	Institutional Strengthening of NEA's Environment Division	ADTA	534,000
1996	2623	PHI	Evaluation of Environmental Standards for Selected Industry Subsectors	ADTA	400,000
1996	2729	PRC	Industrial Pollution Investigation and Assessment in TVEs	ADTA	600,000
1996	2693	PRC	Formulation of an Integrated Environmental Management Plan for the Chao Lake Basin	ADTA	800,000
1996	2695	PRC	Coastal Resource Conservation and Environmental Improvement	ADTA	810,000
1996	2726	PRC	Water Quality Management Planning for Suzhou Creek	ADTA	600,000
1996	2735	PRC	Capacity Building for Natural Resources Legislation	ADTA	800,000
1996	2704	VIE	Hazardous Waste Management	ADTA	600,000
1996	2563	PAK	Forestry Sector	Grant	1,145,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
1996	2724	BAN	Biodiversity Conservation in the Sundarbans Forests	PPTA	500,000
1996	2535	INO	Coral Reef Rehabilitation and Management	PPTA	600,000
1996	2675	PRC	Market Based Energy Conservation and Environmental Improvement	PPTA	597,000
1996	2619	SRI	Upper Watershed Management	PPTA	600,000
1996	5669	REG	Capacity Building in Environmental Economics	RETA	598,000
1996	5684	REG	Subregional Environmental Training and Institutional Strengthening in the GMS	RETA	1,665,000
1996	5695	REG	Environmental Cooperation in Northeast Asia	RETA	495,000
1996	5702	REG	Acid Rain and Emission Reduction for Asia, Phase II	RETA	600,000
1996	5712	REG	Coastal and Marine Environmental Management in the South China Sea, Phase II	RETA	2,700,000
1995	1142	BAN	Upazila Afforestation and Nursery Development	ADTA	628,859
1995	2304	BAN	Strengthening Social Forestry in the Coastal Region	ADTA	130,000
1995	2296	IND	Strengthening EIA Capacity and Environmental Legislation	ADTA	500,000
1995	2403	IND	Strengthening the Capability of the Industrial Development Bank of India in Energy and Environmental Project Management	ADTA	585,000
1995	2518	INO	Central Sulawesi Integrated Area Development and Conservation	ADTA	850,000
1995	2397	KGZ	Strengthening Environmental Institutions and Improving Procedures for EIA	ADTA	556,000
1995	2333	LAO	Institutional Development and Strengthening of the Ministry of Agriculture and Forestry (Ph II)	ADTA	597,000
1995	2329	LAO	Strengthening Environmental Planning and EIA Capability	ADTA	610,000
1995	2299	MAL	Strengthening the Institutional Framework for Sustainable Development	ADTA	142,000
1995	2458	MON	Strengthening Land Use Policies	ADTA	580,000
1995	2385	PHI	Environmental Evaluation of Swamps and Marshlands	ADTA	100,000
1995	2298	PRC	Improving Coal Efficiency and Reducing Environmental Pollution	ADTA	590,000
1995	2434	PRC	Establishing a Center for the Transfer of Environmentally Sound Technology	ADTA	550,000
1995	2494	PRC	Sound Safety and Environmental Practices for Offshore Oil and Gas Production	ADTA	600,000
1995	2398	PRC	Improving Environmental Monitoring and Enforcement in Henan Province	ADTA	90,000
1995	2408	PRC	Land Use and Land Tenure Policy in Fujian Province	ADTA	600,000
1995	2505	PRC	Strengthening Environmental Standards and Enforcement Policies	ADTA	600,000
1995	2337	PRC	Coastal Environmental Protection and Institutional Assessment	ADTA	98,500
1995	2394	PRC	Jianfengling Park Management and Biodiversity Conservation	ADTA	600,000
1995	2407	PRC	Capacity Building for Soil and Water Conservation	ADTA	100,000
1995	2456	PRC	Pilot Environmental Plans for Selected Medium Size Cities	ADTA	537,000
1995	2422	SRI	Institutional Strengthening for Comprehensive Water Resources Management	ADTA	1,570,000
1995	2351	THA	Strengthening the EIA Review Process	ADTA	600,000
1995	2378	THA	Strengthening the Environmental Unit of the Department of Highways	ADTA	200,000
1995	2319	TUV	Urban Planning and Environment Management	ADTA	310,000
1995	2597	VAN	Sanitation Masterplan for Port Vila	ADTA	360,000
1995	2375	VIE	Capacity Building for Provincial Water Supply and Sanitation Planning and Management	ADTA	700,000

Year	TA No.	Ctry	Title	Type	Total Amount (US$)
1995	2376	VIE	Community Environmental Health Improvements for the Provincial Towns	ADTA	500,000
1995	2474	IND	Environmental Improvement and Sustainable Development of the Agra-Mathura-Ferozabad Trapezium in Uttar Pradesh	PPTA	600,000
1995	2366	KAZ	Rehabilitation and Environmental Improvement of the Almaty No. 1 Heat and Power Station	PPTA	556,000
1995	2425	MAL	EIA of the Kalaka-Saribas Integrated Agricultural Development-Phase II	PPTA	87,000
1995	2350	MON	Energy Conservation	PPTA	100,000
1995	2445	PRC	Xian-Xianyang-Tongchuan Environment Improvement	PPTA	500,000
1995	2511	PRC	Zhejiang-Shanxi Water Conservancy	PPTA	1,000,000
1995	2303	THA	Bangkok Metropolitan Region Wastewater Management Action Plan and Feasibility Study	PPTA	600,000
1995	2369	THA	Solid Waste Management Sector Plan	PPTA	400,000
1995	2411	VIE	Forestry Sector and Watershed Management	PPTA	598,000
1995	5622	REG	Subregional Environmental Monitoring and Information System	RETA	1,000,000
1995	5658	REG	Capacity Building for Environmental Law Training in the Asia and Pacific Region	RETA	600,000

ADTA - advisory technical assistance; PPTA - project preparatory technical assistance; RETA - regional technical assistance

Appendix 3
List of Environment-Related Knowledge Products (1995-2008)

2008
A Future Within Reach 2008: Regional Partnerships for the Millennium Development Goals in Asia and the Pacific
Economics of Energy Conservation – ERD Working Paper
Energy Conservation in the People's Republic of China: Fiscal Measures
Environmental Kuznets Curves in the People's Republic of China: Turning Points and Regional Differences – ERD Working Paper
Financing Climate Change Mitigation and Adaptation: Role of Regional Financing Arrangements – RSDD Working Paper
How the People's Republic of China is Pursuing Energy Efficiency Initiatives: A Case Study
In the Pipeline: Water for the Poor: Investing in Small Piped Water Networks
Managing Asian Cities
Market-Based Approaches for Managing the Asian Environment: A Review – ERD Working Paper
Phnom Penh-Asian Development Bank: Partnerships for a Cleaner City - Lessons on Managing the Urban Environment
Reviving Lakes and Wetlands: Lessons Learned from the People's Republic of China
2007
2007 Benchmarking and Data Book of Water Utilities in India
ADB's Sustainability Report
Bangladesh Gas Sector – Issues, Options, and the Way Forward
Best Practices in Water Supply and Sanitation: A Case Study form the 2006 Annual Evaluation Review
Carbon Market Initiative
Climate Change-ADB Programs: Strengthening Mitigation and Adaptation in Asia and the Pacific
Energy for All: Addressing the Energy, Environment, and Poverty Nexus in Asia
Environment Program 2003-2006
Revised Procedural Manual of DENR Administrative Order 2003-30
Sustainability Report: Spotlight on the Environment, Social Development, and Governance
The Millennium Development Goals: Progress in Asia and the Pacific 2007

The Philippine Environmental Impact Statement System: Framework, Implementation, Performance, and Challenges (Published jointly by the World Bank and Asian Development Bank)
Time Preference and Natural Resource Use by Local Communities: The Case of Sinharaja Forest in Sri Lanka – ERD Working Paper
Towards Resource Efficient Economies in Asia and the Pacific: Highlights
2006
China's Water Challenge
Clean Energy Applications in Asia and the Pacific
Energy Efficiency and Climate Change Considerations for On-road Transport in Asia
Environmental Assessment of Nepal: Emerging Issues and Challenges
Poverty, Health, and Ecosystems: Experience from Asia
Promoting Reduce, Reuse, and Recycle in South Asia
Smarter Sanitation: How to Clean Up Your Sanitation and Wastewater Mess
Sustainability Report: Spotlight on the Environment, Social Development, and Governance
Sustainable Urban Transport in Asia: Making the Vision a Reality
Toward a Cleaner Energy Future in Asia and the Pacific
Urbanization and Sustainability: Case Studies of Good Practice
Urban Air Quality Management in Asia: 17 Country Reports and One City Report and Summary of Country/City Synthesis Reports Across Asia
2005
Asia Water Watch 2015: Are Countries in Asia on Track to Meet Target 10 of the MDG?
Asian Environment Outlook 2005
Azerbaijan Urban Environmental Profile
Climate Proofing: A Risk-based Approach to Adaptation (Main Volume and Summary for Policy and Decision Makers)
Energy Efficiency in Transport
GMS Biodiversity Conservation Corridors Initiative Strategic Framework and Technical Assessment
Partnerships for Sustainable Land Management
Regional Master Plan for the Prevention and Control of Dust and Sandstorms in Northeast Asia
The Greater Mekong Subregion: Beyond Borders
The Tonle Sap Basin Strategy
2004
Bringing Water to the Poor
Floods and the Poor: Reducing the Vulnerability of the Poor to the Negative Impacts of Flood
Greater Mekong Subregion (GMS) Atlas of the Environment
Impact of Water on the Poor
Mongolia: Country Environmental Analysis
Pacific Region Environmental Strategy 2005-2009
Pacific Region Environmental Strategy 2005-2009 Vol. I: The Strategy Document
Pacific Region Environmental Strategy 2005-2009 Vol. II: The Case Studies
The Garbage Book: Solid Waste Management in Metro Manila

2003
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ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two thirds of the world's poor: 1.8 billion people who live on less than $2 a day, with 903 million struggling on less than $1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

For inquiries on ADB's environment program, please contact:

Nessim J. Ahmad
Director, Environment and Safeguards Division concurrently Practice Leader (Environment)
Chairperson, Environment Community of Practice
Regional and Sustainable Development Department
Asian Development Bank
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines

Tel +63 2 632 4444
Fax +63 2 636 2444
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