ADB

Environment Program

Greening Growth in Asia and the Pacific

Asian Development Bank

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Foreword

Environment Program: : Greening Growth in Asia and the Pacific presents a snapshot of ADB's environmental strategies, programs, initiatives, partnerships, and a range of activities that demonstrate ADB's commitment to support environmentally sustainable growth in Asia and the Pacific—a strategic agenda of ADB's Strategy 2020. The report highlights innovations designed in selected ADB-supported projects with environmental sustainability (ES) as a theme that were approved in 2008–2010. The report also discusses the emerging environmental challenges in the region, and previews ADB's strategies to strengthen its operational emphasis on the environment including climate change, that would help realize green growth for the region.

Support for projects with ES as a theme has shown a marked upward trend in recent years. From 2003 to 2010, the number and value of loan and grant projects with ES as a theme continued to increase steadily. Fifty-three such projects totaling about $4.9 billion were approved in 2010, representing a nearly 40% increase in number over 2009 and the highest since 1995. Environmental investments in 2010 pushed up the average proportion of projects supporting ES as a theme to 35% from 2008 to 2010, exceeding ADB's 3-year rolling average target of 25% in 2010–2012. In addition, 57 technical assistance projects worth about $71 million and 19 grants worth nearly $188 million were approved in 2010 with ES as a theme.

There were a number of notable accomplishments in key sectors. For instance, the Clean Energy Program harnessed nearly $4.82 billion from 2008–2010, averaging $1.6 billion annually, exceeding the current annual target of $1 billion. The annual average comes close to the $2 billion target set for 2013 onward. This was mainly due to investments in renewable energy sources, specifically wind, solar, and hydropower energy, and projects utilizing demand-side and supply-side energy efficiency features. In 2010, ADB launched its Sustainable Transport Initiative, which aims to promote sustainable transport investments to, among other things, reduce air pollution and mitigate climate change. In the urban sector, ADB projects aim to upgrade environmental and public health conditions through improved water supply, drainage, sanitary facilities including sewerage systems, coupled with improved capacity in urban management. In the agriculture and natural resources sector, projects focus on natural resource management and rural livelihood improvement with environmental components, such as ecosystem conservation and sustainable land and water resource management.

ADB also expanded its efforts on climate change. Important milestones were achieved in 2010, building on nearly two decades of assistance to developing member countries (DMCs). ADB adopted strategic priorities for climate change, including expanding the use of clean energy, encouraging sustainable transport and urban development, managing land use and forests for carbon sequestration, promoting climate-resilient development, and strengthening policies, governance, and capacities. In addition to its significant support to climate change mitigation measures, ADB also dramatically increased its support to country-driven climate change adaptation programs to help build a more

climate resilient Asia. In 2010, ADB approved a total of 36 technical assistance programs and grants, along with 20 investment projects related to climate change adaptation. These represent a 30% increase in the number of technical assistance and grant projects, and a 100% increase over 2009 levels in the number of loan projects related to adaptation.

Subregional cooperation remains important to restore, and enhance the productivity of natural resources and maintain ecosystem services for the improved economic and social well-being of those dependent on these resources. Some examples include: the Core Environment Program and Biodiversity Corridor Initiative, both in the Greater Mekong Subregion; the Coral Triangle Initiative; and the Heart of Borneo Initiative. All of these initiatives are being pursued with the Global Environment Facility (GEF).

ADB continues to provide complementary support for environment sustainability through partnerships, innovative financing mechanisms, policy dialogue, institutional reforms, capacity development, and knowledge generation and dissemination. Close working relationships have also been maintained with development partners, who play a vital role in development efforts, as they complement ADB's core competencies and allow for stronger responses to DMCs' needs.

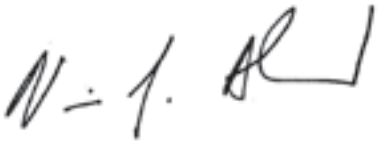
To improve the relevance and strengthen the effectiveness of environmental and social safeguard policies, ADB adopted the Safeguard Policy Statement (SPS) in 2009 which became effective in January 2010. The SPS articulates ADB's environmental safeguard policy principles and borrower requirements for delivering safeguards. The SPS emphasizes capacity development in DMCs and introduces provisions to strengthen and apply country safeguard systems in line with the Paris Declaration and the Accra Agenda for Action.

Looking ahead, ADB will continue to pursue the objectives established under Strategy 2020 – reducing poverty in the region while promoting environmentally sustainable growth, including meeting the climate change challenge. To effectively pursue this agenda, ADB will increasingly be guided by three mutually supportive strategic directions.

First, ADB will increase its support to sustainable infrastructure through its growing portfolio of investments in areas such as clean energy, sustainable transport, urban environment improvement, and water supply and sanitation, all of which contribute to environmental sustainability. Second, natural resource management and maintenance of ecosystem integrity will remain an important area for ADB's environmental assistance to reverse the decline of the region's ecosystems, including shrinking forests, declining biodiversity, depleting water sources, and degraded lands. To this end, it will be crucial to consider opportunities for additional investments in "natural capital" to sustain economic growth in DMCs and build resilience to climate and other risks. Third, efforts to develop sound environmental governance and management capacities will continue to be supported by strengthening policy and institutional frameworks through a sound blend of regulations, market-based instruments, and other mechanisms for improved policy implementation, enforcement, and compliance. Climate change mitigation and adaptation considerations will continue to be systematically embedded in and cut across the environment strategic directions.

Much progress has been achieved in the nearly 20 years since the 1992 Earth Summit in Rio, and there is reason to be cautiously optimistic about what lies ahead. However, the challenges in achieving environmental sustainability in the region remain numerous and varied, ultimately underscoring the need for concerted and coordinated efforts from all development partners to promote environmentally sustainable growth in Asia and the Pacific. As world leaders return to Rio for the 2012 United Nations Conference on Sustainable Development, there is an opportunity to secure renewed political commitments to sustainable development and make real progress toward a greener and more prosperous future where people, especially the poor, enjoy improved living conditions and quality of life.

This report was prepared at the request of the Environment Community of Practice (CoP) to provide an overview of ADB's assistance to its DMCs for achieving environmentally sustainable growth. It was compiled and prepared by staff members of the Environment and Safeguards Division (RSES) of the Regional and Sustainable Development Department, drawing from reports prepared by colleagues in ADB and in close consultation with the Environment CoP. Overall guidance and support were received from the Environment Committee.



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Abbreviations

ADB	–	Asian Development Bank
APAN	–	Asia Pacific Adaptation Network
ASEF	–	Asia Solar Energy Forum
BAQ	–	Better Air Quality
CAI-Asia	–	Clean Air Initiative for Asian Cities
CCF	–	Climate Change Fund
CCS	–	carbon dioxide capture and storage
CDIA	–	Cities Development Initiative for Asia
CDTA	–	capacity development technical assistance
CEA	–	country environment analysis
CEFPF	–	Clean Energy Financing Partnership Facility
CEP	–	Clean Energy Program
CFLs	–	compact fluorescent lamps
CI	–	Conservation International
CP3	–	Climate Public Private Partnership
CPS	–	country partnership strategy
CSS	–	country safeguard system
DMC	–	developing member country
ES	–	environmental sustainability
GEF	–	Global Environment Facility
GHG	–	greenhouse gas
GMS	–	Greater Mekong Subregion
ICT	–	information and communication technology
IGCC	–	integrated gasification combined-cycle
Lao PDR	–	Lao People's Democratic Republic
IUCN	–	International Union for the Conservation of Nature
LDCF	–	Least Developed Countries Fund
MDG	–	Millennium Development Goal
PEF	–	Poverty and Environment Fund
PEP	–	Poverty and Environment Program
PNG	–	Papua New Guinea
PPCR	–	Pilot Program for Climate Resilience
PRC	–	People's Republic of China
REDD	–	Reduced Emissions from Deforestation and Forest Degradation
RETA	–	Regional technical assistance
SCCF	–	Special Climate Change Fund
SIDA	–	Sweden International Development Agency
SPS	–	Safeguard Policy Statement
STI	–	Sustainable Transport Initiative
TA	–	technical assistance
TNC	–	The Nature Conservancy
UFPF	–	Urban Financing Partnership Facility
UNEP	–	United Nations Environment Programme
UNESCAP	–	United Nations Economic and Social Commission for Asia and the Pacific
UOP	–	Urban Operational Plan
WWF	–	World Wide Fund for Nature

I. Introduction

Attaining environmentally sustainable growth is a continuing challenge to ADB's developing member countries (DMCs) in Asia and the Pacific, which remains the fastest growing region in the world. While industrial and agricultural production growth has lifted 521 million people[1] from extreme poverty[2], progress has been accompanied by increasing pressure on the environmental carrying capacity of the region.[3]

The region is experiencing an increasingly resource-intensive growth due to rapid urbanization, increasing consumption by a fast rising middle class, expanding production patterns, and the need to provide new infrastructure. As a result, DMCs are challenged by associated air and water pollution, degraded natural resources and threatened ecosystems, worsening water stress, natural disasters, and increased generation of wastes including hazardous waste. All of these problems affect public health and human well-being, with the poor being the hardest hit. Climate change—the most dramatic symptom of unsustainable development—is exacerbating these problems, and threatening the region's future well-being and that of the environment, and the world.

While these challenges are daunting, they also offer new opportunities to redirect development to an environmentally sustainable and low-carbon path. For its part, ADB, in line with Strategy 2020, is strengthening its operational emphasis on the environment to help realize environmentally sustainable growth for the region as part of its ongoing efforts to reduce poverty. In its policies, strategies, programs, and projects ADB is assisting DMCs address a range of environmental problems, including climate change.

This chapter presents a brief account of the natural resource endowment and current conditions, and the environment-related challenges that are mostly associated with the projected resource-intensive economic growth of Asia and the Pacific. The region's performance in achieving the 7th Millennium Development Goal (MDG), ensuring environmental sustainability, is also discussed.

The chapter also underscores recent global and regional developments, suggesting that a new development paradigm that better balances growth with environmental and social sustainability is emerging. It concludes

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1 From 1.5 billion in 1990 to 979 million in 2005.
2 Defined as living on an income of less than $1.25 a day.
3 ESCAP. *Review of the State of the Environment in Asia and the Pacific, 2005. Report to the 5th Ministerial Conference on Environment and Development.* Bangkok.

with a summary of ADB's response to help its DMCs reduce poverty and improve their living conditions and quality of life in accordance with ADB's Long-term Strategic Framework for 2008–2020 or Strategy 2020.

A. Resource Endowment and Current Conditions

Two factors determine the environmental carrying capacity of the region: its natural resource endowment and the pressure placed on it by human activity. Using the ecological footprinting methodology, a 2005 review[4] cited that countries in the region are over-exploiting their own natural resource base and/or are using the natural resource base of other countries to support their consumption patterns and economic growth. A brief account of the region's natural resource endowment and the environmental pressures from human activity manifested in the current environmental and resource conditions are presented below.

Resource endowment. The region is less generously endowed with natural resources than other parts of the world. With 58% of the world's population living on only 20% of its land, the region's population density is 1.5 times higher than the global average. Freshwater available per person is the lowest among the regions. Moreover, the region's biologically productive area per person and arable land per person are less than 60% and 80% of the global average, respectively. The 2005 review further states that even if actual regional consumption pressures are smaller per person than the global average due to persistently high poverty levels, the biologically productive area required to support current consumption levels already exceeds the available area per person in at least 20 countries. Furthermore, with a declining natural resource endowment caused by environmental pressures, the size of the human population that can be sustainably supported is decreasing given increasing consumption pressures.

Current conditions. The environmental pressures exerted by human activities have resulted in declining environmental or resource conditions.

Air pollution. Asia's rapid economic growth has generated one of the highest air pollution levels and one of the fastest increases in greenhouse gas (GHG) emissions in the world. Air quality in urban centers is generally poor with PM10[5] the main air pollutant of concern.[6] In over 50% of reporting cities, average annual concentrations of suspended particulates and nitrogen dioxide (NO_2) have exceeded World Health Organization (WHO) standard limits. While many cities have reported improvements in the last ten years, including Kolkata and Shanghai,[7] suspended particulates remain a concern to a growing number of cities. On the other hand, a much lower percentage of cities exceeded concentration limits of sulfur dioxide (SO_2).

Air pollution threatens not just the environment, but also the health and quality of life of people living in Asian cities. In Asia, WHO attributes more than half a million premature deaths yearly to urban air pollution. Indoor air pollution continues to impact on health and mortality rates. Different studies

[4] See footnote 3.

[5] PM10 refers to particles of less than 10 μm in diameter, associated with reduced lung function, aggravation of respiratory ailments, and mortality. PM10 particulates are generally created during burning processes related to power generation and automobiles, among other sources. A total of 15 cities provided data for suspended particulates and 19 and 17 cities for NO_2 and SO_2 respectively. Data for 2000-2003. Upper limit of guideline range for suspended particulate matter was used. Based on data provided in Huizenga and others (2004). "Air quality management capability in Asian cities" (ADB Clean Air Initiative for Asian cities and Stockholm Environmental Institute).

[6] Based on data provided in Huizenga and others.2004. "Air quality management capability in Asian cities" (ADB Clean Air Initiative for Asian cities and Stockholm Environmental Institute).

[7] Data from the Clean Air Asia Secretariat. 2004.

have reported economic losses of 2%–4% of GDP in Asian cities. Air pollution also damages agricultural productivity, forests, tourism, and historic monuments and buildings. In spite of recent favorable policies and actions, air pollution could worsen in the future due to increase in energy use, vehicle use, and industrial growth in Asia, if effective preventive measures are not put in place.

Water stress. Water scarcity and contamination are growing. Per capita water availability is approaching scarcity limits in many areas subject to seasonal water shortages. In particular, South Asia, the northwestern part of the People's Republic of China (PRC), and Mongolia are affected. Furthermore, surface and groundwater resources are degraded, owing to over-extraction and pollution. Main pollutants are nitrates from untreated domestic waste and heavy metals, which are either naturally occurring or anthropogenic. This stress is affecting the region's food and energy production, its ecological needs, and the health and livelihoods of its populations.

Water stress will continue to be further exacerbated by climate change, evident in the current inter-annual variability of rainfall. Many large Asian river basins are particularly vulnerable to regional warming, given the critical role of glaciers and snowfields that serve as "water towers," in supporting dry season and drought year flows upon which hundreds of millions of Asians depend. Climate change is also warming water in large lakes in the region.[8] In past decades, temperatures have increased by 0.45°C on average, which, while seemingly modest, can have dramatic effects on water quality and ecosystems in lakes. Further warming could result in rapid biodiversity loss in freshwater ecosystems.

Soil degradation is a critical issue affecting agricultural livelihoods. According to World Soil Information data from the United Nations International Soil Reference and Information Centre (ISRIC), 46.4% of soil had decreased in productivity and partially destroyed biological functions. A third of this soil with decreased productivity is found in Asia and a fifth in Africa. Over 50% of soils that have been degraded by deforestation are situated in Asia, where 40% of soil degradation is estimated to be caused mainly by deforestation. Furthermore, 37% of soils degraded by inappropriate agricultural practices are in Asia. The 2005 review[9] highlights this as a critical issue notably in the agricultural region of the Aral Sea Basin and in South and Southwest Asia. In Southeast Asia, the majority of agricultural lands are severely affected by wind and water erosion, as well as by chemical and physical deterioration.

Deforestation. The extent of forests in Asia and the Pacific[10] has changed dramatically over the past 2 decades. In the 1990s, the region experienced a net forest loss of 0.7 million hectares (ha) per year, while in the last decade, the forest area increased by an average of 1.4 million ha per year.[11] The planted forest areas increased substantially through afforestation programs, mainly as a result of plantation programs in India, the PRC, and Viet Nam. However, this is not enough

[8] Schneider and Hook. 2010.

[9] See footnote 3.

[10] Data on forest resources presented in this section was taken from the 2011 review by the Food and Agriculture Organization of the United Nations on the state of world's forests wherein countries and areas in the Asia and the Pacific region were grouped into the following subregions: East Asia (Democratic People's Republic of Korea, Japan, Mongolia, People's Republic of China, Republic of Korea); South Asia (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka); Southeast Asia (Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Thailand, Timor-Leste, Viet Nam); and Oceania (American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Norfolk Island, Northern Mariana Islands, Palau, Papua New Guinea, Pitcairn, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, Wallis and Futuna Islands).

[11] Food and Agriculture Organization of the United Nations. 2011. *State of World's Forests*. Rome.

Table 1.01: Natural Capital Underlying Components and Illustrative Services and Values

Biodiversity	Ecosystem goods and services (examples)	Economic values (examples)
Ecosystems (variety and extent/area)	• Recreation • Water regulation • Carbon storage	Avoiding GHG emissions by conserving forests: $3.7 trillion net present value
Species (diversity and abundance)	• Food, fire, fuel • Design inspiration • Pollination	Contribution of insect pollinators to agricultural output: ~$190 billion/ year
Genes (variability and population)	• Medicinal discovery • Disease resistance • Adaptive capacity	25%–50% of the $640 billion pharmaceutical market is derived from genetic resources

Source: UNEP. 2011. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication—A Synthesis for Policy Makers*. http://www.unep.org/greeneconomy/

to compensate for the significant decline in ecosystem services provided by natural forests, including wildlife habitat, non-wood forest products,[12] and watershed protection. These environmental goods and services cannot be replaced by plantation forests, which are also more vulnerable to climate change and disease.

Further, the Food and Agriculture Organization's (FAO) 2011 global forest resource assessment (FRA) showed that the area of primary forests decreased in all Asia and the Pacific subregions in the last decade, despite the fact that the area designated for conservation of biodiversity increased in the same period. Mixed trends were observed in the subregions in the extent to which forests were set aside for soil and water protection. The area of productive forests declined over the last decade with the exception of the South Asia and Oceania subregions. Falling levels of wood removals were also observed throughout the region, largely as a result of the reduction in woodfuel removals. Employment in the primary production of forest goods was very high in the region compared with the global total.

Biodiversity loss. Biodiversity is in decline globally, in most regions, and in most of its forms.[13] The 2010 UNEP report indicated that biodiversity loss in Asia and the Pacific has significantly contributed to the global decline. While drivers of biodiversity loss are identified as (i) habitat destruction; degradation, and fragmentation, (ii) trade in endangered species particularly in Southeast Asia; (iii) overexploitation of marine resources; and (iv) introduction of alien and invasive species, it is reported that the economic invisibility of ecosystem services (see Table 1.01), which is mostly in the nature of public goods and services, has been a major cause of their undervaluation, mismanagement, and ultimate loss.[14]

Transboundary environmental problems. Many environmental problems cross borders, and addressing them requires coordinated regional or global action. Protecting regional and global public goods like transboundary air sheds or watersheds, biodiversity corridors, and shared coastal ecosystems, requires decision-making processes that go beyond the

[12] These products include foods (nuts, fruits, mushrooms, honey, game, gums); food additives (spices, herbs, flavorings, sweeteners); fodder; fibers (furniture, clothing, construction); fragrances for perfumes; ornamental pods and seeds; resins; oils; plant and animal products with medicinal value.

[13] UNEP. 2010. *The State of Biodiversity in Asia and the Pacific*. Bangkok, Thailand.

[14] UNEP. 2011. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication—A Synthesis for Policy Makers*. http://www.unep.org/greeneconomy/

borders of individual nation-states. Specific regional public good challenges include:

- transboundary air pollution, such as "haze" (due to fuel wood use, the burning of agricultural wastes, and forest clearing) and dust and sand storms tied to land degradation, a particular problem in East Asia.
- fragmentation of biodiversity corridors by economic development, which contributes to biodiversity loss in the region by limiting fauna transfer from one protected area to another.
- competing demand for freshwater use among key sectors, and among countries sharing transboundary river systems and aquifers. An example is the current and planned dams on the Mekong River, which are increasingly causing disputes among countries due to concerns over potential downstream environmental and social impacts.
- transboundary movement of hazardous materials, including electronic waste, incinerator ash, industrial sludge, persistent organic pollutants, and contaminated medical equipment, which creates a burden for low-income countries, where environmental and safety standards are low or not rigorously enforced.

B. Emerging Environment-related Challenges

In its march toward prosperity and a region free of poverty, the region faces daunting environment-related challenges, given its limited natural resource endowment and generally declining environmental and resource conditions. The continuing resource-intensive pattern of economic growth, considered the most important driver of environmental change in the region, presents significant environment-related challenges. These challenges, summarized below, highlight the need to balance economic growth with environmental and social sustainability.

Increasing resource-intensive industry and pollution. As Asia leads the world out of recession, the center of gravity of the global economy is once again shifting toward the region. Industrial and agricultural production in the region—dubbed as "Factory Asia"—will continue to increase and contribute to pollution and heighten environmental pressures not only in producing countries, but in the countries' trading partners. Given generally weak governance and institutions in these countries, the environment continues to be under increasing pressure due to resource extraction[15] and mounting waste. Rapidly expanding industries involved in the production of transport equipment, crude steel, chemicals, petroleum and rubber and plastic products are not only energy intensive but also water intensive.

While a few countries are making significant progress in reducing pollution intensities, some countries increase the amount of pollution produced for every dollar of gross domestic product earned. Central Asian countries are among the countries with the highest pollution intensities in the region.

Cleaner production initiatives, along with corporate rating and disclosure programs and the application of economic instruments, are successful in reducing pollution in local areas, but making the patterns of industrial growth environmentally sustainable requires sector planning and investment promotion that take into account pollution intensity, resource use, risks to human health, and natural resource-based livelihoods.

[15] In 2005, for example, nearly half (48%) of global resources were extracted from the region. From the European Commission. Science for Environment Policy (Special Issue). *Resource Efficiency.* 11 May 2011.

Increasing need for urban infrastructure and services. Urban populations in the region are growing at an unprecedented rate. An average annual increase of 44 million is projected over the next 20 years. Ten of the world's 25 largest and fastest-growing cities are in Asia. The ability of many cities to support continued economic growth is challenged, as the demand for urban services and infrastructure continue to rise and the environmental problems associated with urban growth increase.

About two-thirds of the projected $4.7 billion–$8.0 trillion investment in the region is needed for new infrastructure.[16] In addition, infrastructure for the 35%–40% of the region's urban residents who live in slums requires upgrading.[17] The need to design infrastructure according to principles of sustainability, including accessibility, eco-efficiency, and social inclusiveness, is enormous.

Projected scarcities in food, water, and non-renewable resources. The expanding industrial production, rapid urbanization rates and rising middle class population continue to create an ever-increasing demand for food, water, energy, and consumer goods, among others. The rising middle class in some countries in the region will drive the production of goods and services. In India, the number of households that can afford discretionary spending will grow from the present 8 million to an estimated 94 million by 2025. In PRC, the middle class that comprised an estimated 87 million consumers in 2005 will rise to 317 million by 2015.[18]

The region's limited resource base is of particular concern, given that the demand for food in Asia is projected to increase by 40% between 2000 and 2050, while hunger is still prevalent in rural areas, mostly affecting marginal farmers and fisherfolks and those who depend largely on the consumption and sale of products derived from natural resources. The agriculture sector faces increasingly complex challenges—competition for land and water, changing production and consumption patterns, environmental risks, and price surges for energy and fertilizer.[19] The FAO identifies the main obstacle to expanded food production as the use of crops for biofuels, and non-grain or non-food crops.

In water-stressed countries, the demand for water from urban and industrial centers and for agriculture is competing with the need for water to sustain ecosystems and their services on which peoples' livelihoods depend. As population grows and urbanization rates rise rapidly, stress on the region's water resources will intensify. Nearly 70% of freshwater withdrawals in the region are mainly for irrigation. Based on UN estimates, to double and meet global food requirements by 2025, annual irrigation water use will have to increase about 30% above present use for annual crop production. But this increase may not be possible if other essential human needs are to be met. Under a business-as-usual scenario, the supply of water for irrigation in

16 The 4.7 billion estimate from Menon, J., "Regional efforts to create an attractive investment climate," presentation to the 2nd OECD-Southeast Asia Regional Forum, *Enhancing Competitiveness through Regional Integration*, Bangkok,Thailand, 27–28 April 2009. The $8 trillion estimate is from ADB and the Asian Development Bank Institute (ADBI), 2009. *Infrastructure for a Seamless Asia*.Tokyo.

17 Estimates based on data presented in the United Nations Settlements Programme (UN-Habitat), 2010, *State of the world's cities report* 2008/2009. Nairobi.

18 (a) Beinhocker, E., D. Farrel, and A. Zainulbhai, "Tracking the growth of India's middle class", The McKinsey Quarterly (2007), vol. 3l, pp. 50–61; (b) Estimated by Mastercard Worldwide, Asia Pacific, cited in Wong, Y., "Understanding the affluent consumers of China", *Insights* (Second quarter 2007), p.3.

19 A recent research suggests the need to reduce phosphorus fertilizer use through greater material efficiency measures because its non-renewable resource (i.e., phosphate rocks) is being depleted. Phosphorus resources are not threatened in the short-term, but could decline by up to 50% by 2100. From the European Commission. Science for Environment Policy (Special Issue). *More Efficient Use of Phosphorus needed*. 11 May 2011.)

developing countries (already affected in many places by old and poorly maintained irrigation systems) will be increasingly constrained by 2025, and is estimated to cause annual global losses of 350 million tons of food. [20]

Meanwhile, as of 2008, 480 million people had no access to safe drinking water. An investment of at least $8 billion annually is needed for the region to meet the Millennium Development Goals (MDG) targets for safe drinking water and sanitation.[21] This does not include the investments also needed for irrigation services, river basin management, wastewater management, flood management, and climate change adaptation.

Enhanced extraction and consumption of non-renewable resources, such as minerals, metals, and other materials, has also been observed. Demand for these resources has doubled from 23.6 billion tons to around 35.3 billion tons in 1995–2005. While accounting for about 25% of the world GDP, the region represents 50% of the world's material consumption.[22] Underground reserves of iron, cobalt, platinum, and palladium are projected to be close to exhaustion by 2050. In the short and medium term, scarcities will translate into higher prices, and in the long term may disrupt production processes and hamper economic growth.

Increasing greenhouse gas emissions. The Asia and Pacific region is the fastest growing source of new greenhouse gas (GHG) emissions, although developed countries still produce far more GHGs per capita. Increasing GHG emissions in the region are caused by carbon-intensive energy production, inefficient and fossil fuel-based transport systems, rapid and largely uncontrolled urban and industrial development, agricultural intensification, and forest and land degradation.

The region's projected energy demand will result in increased GHG emissions. The projected annual growth rate of energy demand in the region will surpass that of global demand through 2030. Economies in Asia and the Pacific are projected to register the highest growth in the world, at 3.5% per year through 2030.[23] This implies a projected 2.4% annual rate of energy demand growth through 2030, higher than the global growth in demand of 1.5% for this same period. This projected energy demand translates into significant projected increases in carbon dioxide (CO_2) emissions from the burning of fossil fuels, leading to concerns about energy security and increased global warming caused by GHG emissions from increased fossil fuel consumption.

Motorized transport is becoming a large source of GHG emissions, a problem that requires solution if atmospheric concentrations of GHG are to be stabilized. Emissions from fuel combustion now account for 13% of worldwide emissions, a trend that has become more pronounced over the last 30 years.[24] A billion of the 6 billion tons of worldwide transport-related CO_2 emissions come from Asia and the Pacific region.

Deforestation and other land use changes—accounting for 15% to 20% of global GHG emissions—are the largest source of such emissions in many countries in the region. Deforestation and other land use changes are responsible for as much as 75% of total GHG emissions in Southeast Asia, reputed to have the most biodiverse forests on a per area basis in the world.

[20] Rosegrant, M., X. Cai, and S.A. Cline, *World Water and Food to 2025. Dealing with Scarcity* (Washington, DC, International Food Policy Research Institute, 2002), accessed on 15 July 2010 at htt;://www.ifpri.orga/publication/world-waterand-food-2025.

[21] ADB. 2011. Water Financing Program. Manila.

[22] Commonwealth Scientific and Industrial Research Organisation and UNEP Asia-Pacific Material Flow Database, www. csiro.au/AsiaPacificMaterialFlows

[23] ADB. 2009. *Energy Outlook for Asia and the Pacific*. Manila.

[24] International Energy Agency. 2008. Paris.

Vulnerability to climate change. Anthropogenic climate change is a serious challenge to sustainability. It threatens not only the integrity of natural systems, but also the very fabric of economic and social systems, especially in the developing world. Among all the regions, Asia and the Pacific has the greatest number of people at risk from climate change impacts. The poorest and the most vulnerable communities are likely to suffer the most. Climate change affects food security, water security, habitats, and livelihoods, and may force Asians to find other places to live. Many small island states will be directly threatened by sea level rise because of changing weather patterns. Hard-won gains in poverty reduction and progress toward achieving MDG targets will also be jeopardized by the consequences of climate change.

Weak environmental governance. Weak governance and institutions continue to pose a challenge to environmentally sustainable growth in the region. While environmental policies, laws, and institutions have been strengthened in some countries, effective enforcement and compliance have yet to be seen, hindered by weak political will, low levels of institutional capacity, and inadequate budget allocations. In addition, the environmental ministries and agencies of DMCs often do not hold strong positions within their respective governments, and coordination among other relevant sector ministries, such as forestry, mining, land use, agriculture, fisheries, and energy and transport, is often weak. The improvement of environmental performance has been centered mainly on pollution control, which may have distracted from long-term plans and policies to improve environmental sustainability.[25]

The region's limited natural resource endowment, generally declining environmental and resource conditions, and emerging environmental challenges driven by fast-paced and resource-intensive economic growth, all work together to expand risk and uncertainty, and to deepen the vulnerability of the region. These challenges, while daunting on many levels, also offer opportunities for policy makers to rethink economic growth strategies. A better understanding of the challenges of governance for sustainable development that goes beyond environmental governance concerns, as well as strengthened environmental governance regimes, is also required.

C. MDG 7 Performance

Achieving Goal 1, eradicating poverty, is unlikely unless Goal 7, ensuring environmental sustainability, is also achieved. However, as of 2008, the region's progress to ensure environmental sustainability has been varied (see Appendix 2).[26] Table 1.2 compares DMCs' progress in achieving Goal 7 targets in 2007 and 2008. The region made good progress in reducing consumption of ozone-depleting chlorofluorocarbons and in increasing the ratio of protected area to maintain biological diversity to surface area.

The region also made good progress in the area of access to safe drinking water as an estimated 53% of DMCs are either early achievers or on track. Another 35% of DMCs are progressing slowly (Azerbaijan, Bangladesh, Bhutan, Cook Islands, India, Indonesia, the Lao People's Democratic Republic [Lao PDR], the Maldives, Myanmar, Pakistan, Palau, Solomon Islands, Tajikistan, and Turkmenistan), while another 12% are not progressing at all

[25] ESCAP. *2005. Review of the State of the Environment in Asia and the Pacific, Report to the 5th Ministerial Conference on Environment and Development*. Bangkok

[26] ESCAP/ADB/UNDP. *2010. Paths to 2015: MDG Priorities in Asia and the Pacific*. Asia-Pacific MDG Report 2010/11. Bangkok. United Nations.

Table 1.2: Developing Member Countries' Progress in Achieving MDG 7 Targets: 2007–2008

Indicator	Percentage of DMCs[a]							
	Early Achiever		On Track		Slow		No Progress/ Regressing	
	2007[b]	2008[c]	2007	2008	2007	2008	2007	2008
Forest cover	24	22	33	29	0	0	43	49
Protected area	90	95	10	5	0	0	0	0
CO_2 emissions	42	17	0	0	0	0	58	83
Ozone-depleting substances	80	93	8	0	0	0	12	7
Safe drinking water	29	35	14	18	21	35	36	12
Basic sanitation	21	28	21	12	33	42	25	18

[a]The list of Developing Member Countries for each progress column is presented in Appendix 1. The total number of DMCs used for the percentages is only the number of DMCs presented in the source report.
[b]Source: ESCAP/ADB/UNDP. *2007. The Millennium Development Goals: Progress in Asia and the Pacific.* Bangkok. United Nations.
[c]Source: ESCAP/ADB/UNDP. *2010. Paths to 2015: MDG Priorities in Asia and the Pacific*. Asia-Pacific MDG Report 2010/11. Bangkok. United Nations.

(Kazakhstan, the Marshall Islands, Papua New Guinea, Samoa, and Uzbekistan).

The region's achievement is also relatively good in the area of access to basic sanitation. Some 40% of DMCs have progressed well, and the remaining 60% are either progressing slowly or not progressing at all. Other DMCs such as Afghanistan, Armenia, Bangladesh, Bhutan, Cambodia, India, Indonesia, Kazakhstan, Kiribati, the Marshall Islands, Mongolia, Nepal, Pakistan, the PRC, Solomon Islands, Tuvalu, and Vanuatu, comprising 42%, are progressing slowly, while Azerbaijan, Georgia, the Kyrgyz Republic, Micronesia, Papua New Guinea, Tonga, and Turkmenistan, comprising 18%, are not progressing at all.

The region played out poorly on two indicators. These are on increasing the proportion of land area covered by forest and in reducing CO_2 emissions per capita. Only nine DMCs achieved early the target to improve forest cover, while seven DMCs achieved early the CO_2 emissions per capita target. In terms of the former, 49% of DMCs are not progressing (Afghanistan, Armenia, Bangladesh, Cambodia, Indonesia, Kazakhstan, the Lao PDR, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, the Philippines, Solomon Islands, Sri Lanka, Thailand, and Timor-Leste).

A greater proportion (83%) of DMCs[27] is not progressing in the CO_2 emissions per capita target. The continued high percentage of DMCs that have not achieved the CO_2 emissions target since the last MDG report indicates relatively slow progress in the uptake of clean energy in the region.

D. Toward Green Growth

In the midst of these environmental challenges, recent events and developments suggest that a new development paradigm that better balances growth with environmental and social sustainability is emerging. While the world is slowly recovering from economic and financial crises, a dialogue on natural capital and

[27] These include countries such as Afghanistan, Armenia, Azerbaijan, Bangladesh, Bhutan, Cambodia, Cook Islands, Fiji, Georgia, India, Indonesia, Kazakhstan, the Kyrgyz Republic, the Lao PDR, Malaysia, the Maldives, the Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Pakistan, Palau, Papua New Guinea, the PRC, Samoa, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Tonga, Turkmenistan, and Viet Nam.

greening the economy[28] has begun in global fora, countries, communities, and companies.

At the global level, the latest round of climate negotiations, held in December 2010 in Cancún, Mexico, put the world's efforts on climate change back on track. The decisions made succeeded in "anchoring" the national targets and actions governments put forward in and after the 2009 climate conference in Copenhagen, Denmark.

At the national level, countries have renewed their commitments to work toward environmental sustainability at international fora, and some have initiated national actions. Countries that have prominently pursued and invested in strategies and policy reform related to the greening of growth are Japan, the PRC, and the Republic of Korea. Many other governments, including Cambodia, Fiji, Kazakhstan, the Maldives, and Mongolia have made major policy statements supporting green growth.[29]

The private sector is not only rapidly embracing clean technology and green investment opportunities, but is also recognizing that threats to ecosystems could have serious effects on business. For the first time at a G-20 meeting in the Republic of Korea in November 2010, more than 100 Chief Executive Officers reviewed strategies for a greener global economy.

Corporate leaders from 34 countries urged the G-20 to facilitate green growth, including improvements in energy efficiency and the creation of "green jobs." The rapid development and uptake of renewable energy technologies is already creating millions of jobs, and more opportunities to create "green jobs" are emerging in natural resource management, sustainable food production, waste processing, and other fields. Members of the scientific community and others point out many approaches and technologies available to reduce GHG emissions.

Meanwhile, global new investment in sustainable energy reached $162 billion in 2009, adding an estimated 50 gigawatts (GW) of renewable energy generation capacity, in addition to 28 GW of new large hydroelectric capacity. If this trend continues, 2011 could be the first year that new low-carbon energy capacity exceeds new fossil-fuel capacity.[30] This is supported by other signs of a more permanent shift toward sustainable energy, such as an accelerating energy efficiency improvement rate; growth in public investment in low-carbon technology research, development, and demonstration; and further development of hybrid and fully electric vehicles by leading companies.[31]

Public pressure is building in the region to clean up polluted cities and protect remaining natural areas, with a growing middle class increasingly making its voice heard. This is resulting in legislative, social, and market pressures on industries to exercise greater environmental responsibility. In addition, NGOs, the judiciary, media, and the academe are becoming increasingly involved and galvanizing public support to address environmental problems.

E. ADB's Response

As a premiere development institution in the region with a mission to help its DMCs

[28] Pursuing a green economy entails using less materials, energy, water, and land per unit of economic activity, as well as reducing environmental damage per unit of economic activity.

[29] Green growth can be thought of as economic progress that fosters ecologically sustainable, low-carbon, and socially inclusive development. With respect to ADB operations, green growth can be considered equivalent to ADB's Strategy 2020 agenda on environmentally sustainable growth.

[30] The United Nations Environment Programme and Bloomberg New Energy Finance, 2010.

[31] The International Energy Agency, 2010a.

reduce poverty and improve their living conditions and quality of life, ADB continues to pursue its commitment to promote environmentally sustainable growth in Asia and the Pacific. Under its long-term strategic framework for 2008–2020, or Strategy 2020,[32] 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 natural resources, hastening environmental degradation both in urban and rural areas, and impacting climate change. Only growth that is environmentally sustainable can eliminate poverty, since many poor people depend on natural resources for their livelihoods, and the poor are the most vulnerable to the impacts and risks brought about by a degraded environment and extreme weather events.

In line with Strategy 2020, ADB places central emphasis on climate change, livable cities and a range of complementary and supportive actions aiming at, among others, improving environmental governance, policies, knowledge and environmental management capacities at country, sub-regional, and regional levels. To effectively pursue this agenda and given past and current experience in this area, ADB operations on environment, including climate change, will be guided by three mutually supportive strategic directions which are promoting transitions to sustainable infrastructure, improving natural resource management and maintaining ecosystem integrity, and building sound environmental governance and management capacities. Details are provided in Chapter IV.

[32] ADB. 2008. Strategy 2020: *The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

F. Purpose and Scope of Report

This report aims to increase awareness among ADB's stakeholders—its borrowers, clients, development partners, civil society including NGOs, and the private sector—on the measures ADB is taking to help its DMCs address environmental challenges in the region. The report compiles, in one volume, ADB's environmental assistance to its DMCs.

Chapter 2 gives a snapshot of this assistance and other activities, particularly from 2008 to 2010. It presents ADB's environmental performance through its funded loan, grant, and technical assistance projects with environmental sustainability as a theme. It also discusses ADB practices to mainstream environment into country partnership strategies and sector road maps, and to integrate safeguards into investment operations. It presents an overview of its knowledge generation and sharing activities.

Chapter 3 discusses ADB's initiatives, subregional programs, and partnerships that, for the most part, drive its operations on environment including climate change.

Chapter 4 highlights three mutually supportive areas that can be given greater attention in the future to help achieve environmentally sustainable growth.

A set of appendixes accompanies the text: appendixes 1 and 2 present the MDG-7 targets and indicators; appendixes 3 and 4, the loan, TA and grant projects with ES as a theme; and appendix 5, the list of knowledge products.

II. Environmental Assistance

The long-term strategic framework for 2008–2020 (Strategy 2020) of ADB has identified three agendas for Asia and the Pacific that are crucial to reducing poverty and improving the quality of life for its people: inclusive economic growth, environmentally sustainable growth, and regional integration. Along with these, five core areas of intervention were identified: infrastructure, environment, regional cooperation and integration, finance sector development, and education. Environment, including climate change, as one of these five core areas, has become an important part of the investment portfolio and has been increasingly integrated into various aspects of operations.

ADB has strengthened its operational emphasis on the environment, including climate change in support of green growth for the region. It has expanded its promotion of, and investment in, sound environmental management. To address the climate change challenge, ADB has also identified five priorities for attention and has thus put emphasis on supporting the expanded use of clean energy, encouraging sustainable transport and urban development, managing land use and forests for carbon sequestration, promoting climate-resilient development, and strengthening policies, governance, and capacities. ADB has also emphasized the importance of livable cities, focusing assistance on 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.

ADB has also emphasized support for the mainstreaming of environmental considerations into the policies and investment programs of DMCs, while strengthening the legal, regulatory, and enforcement capacities of public institutions with regard to environmental considerations. With the approval of the Safeguard Policy Statement in 2009, ADB continues to reinforce environmental safeguards in its operations and in country systems. It also promotes and supports regional cooperation to provide effective approaches and solutions on shared environmental public goods, and facilitates the transfer of knowledge in environmental management and new technologies.

A snapshot of ADB's environmental strategies and programs, loan, grant and TA projects with environmental sustainability (ES) as a theme, a range of assistance provided, activities from 2003 to 2010 and particularly in recent years, from 2008 to 2010, is presented below.

A. Mainstreaming Environmental Considerations into Country Partnership Strategies and Sector Road Maps

Under new streamlined guidelines for preparing CPS, information and knowledge generation (including thematic, country, and sector information) are undertaken independently from the CPS process. This helps ensure that various assessments and analytical studies, such as country environment analysis (CEAs), are undertaken at a time convenient and appropriate for the government and other development partners. However, CEAs can still serve as important inputs into the preparation of CPSs and Country Operations Business Plans (COBPs). CEAs provide valuable information on the environmental challenges, needs and opportunities in the DMCs, thereby helping them prioritize environmentally sustainable development projects and programs.

These CEA reports cover general environment status and trends in a country; policy, legislative, institutional, and budgetary framework for environmental management; and major constraints to improved environmental management in sectors relevant to ADB operations. CEA reports also present environmental opportunities and issues associated with ADB's CPSs. In some CEAs, environment road maps are produced, and lending and nonlending products proposed and included in CPSs. This helps set the stage for TA, grants, and loans with ES as a theme. In preparing CEAs, ADB closely coordinates with governments and other development partners.

A review of 16 CPSs approved from 2008 to 2010 reveals that environmental considerations continue to be mainstreamed into ADB operations. Support for environmentally sustainable growth is reflected in the CPSs. The environmental strategies presented in the CPS cover a wide range of subthemes, and include (i) protection and management of coastal ecosystems; (ii) integrated water resources management; (iii) enhanced sustainability of urban areas through improvements in water supply, sanitation services, and traffic management; (iv) increased efficiency in transport; (v) the promotion of clean energy; (vi) management of climate change through improved environmental resilience, such as the climate-proofing of infrastructure projects; and (vii) institutional capacity strengthening to implement environmental safeguards.

Some CPSs present clear statements on environmental approaches, such as climate-proofing infrastructure in Kiribati, Papua New Guinea (PNG), and Vanuatu; the adoption of cleaner coal technology in supercritical boilers in the People's Republic of China (PRC); and investments in adaptation measures for integrated watershed and coastal management in Solomon Islands. Other CPSs have broader statements, such as support for clean and environmentally sustainable energy operations, the inclusion of climate change considerations in project design, improved sustainability and integrity of natural resources, and environment-friendly infrastructure.

Environmental considerations are taken into account in sector road maps and/or the operational priorities[33] of all CPS. In order of decreasing frequency, environmental considerations are integrated most frequently in energy, water supply and other municipal infrastructure, agriculture and natural resources, and transport sectors. Almost all of these are supported by proposed lending and nonlending products.

[33] Following results of the study *Country Partnership Strategy: Responding to the New Aid Architecture (2009)*, guidelines for CPS preparation were revised in 2010, and required the CPS to be a concise document with main text not exceeding 15 pages.

Some sector road maps, such as on water resources, provide clear directions on the use of proven participatory planning and implementation tools that help achieve environmental sustainability, such as the use of integrated water resource management (IWRM) in India, Nepal,[34] Pakistan, and the PRC. Efforts to mainstream environmental issues are also noted, even in Tuvalu, where ADB's assistance was only in finance and public sector management. The CPS sector road map cited the importance of climate change adaptation due to Tuvalu's vulnerability to the effects of climate change.[35]

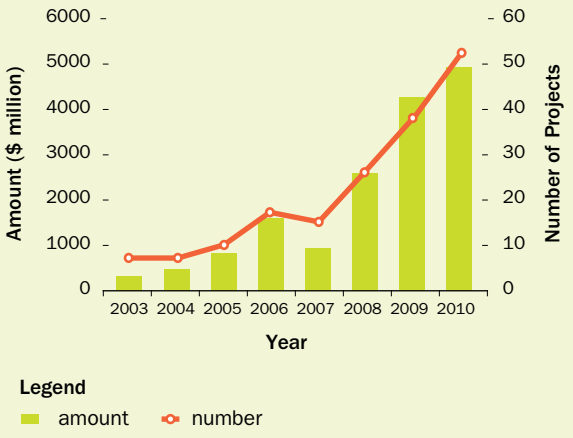
Climate change is recognized as an issue in all CPSs. Some CPSs (for India, Pakistan, the PRC, and Sri Lanka) proposed loan projects involving the use of renewable energy sources and energy efficient technologies. A few CPSs (for Cook Islands, Kiribati, and Sri Lanka) propose adaptation projects. A good number of CPSs (for Nepal, Palau, PNG, the PRC, Solomon Islands, Sri Lanka, Tajikistan, and Vanuatu) include technical assistance projects for climate change adaptation, while a few (for India, Nepal, the PRC, and Vanuatu) include technical assistance projects for climate change mitigation.

B. Supporting Loan and Grant Projects with Environmental Sustainability as a Theme

To monitor the effectiveness of ADB in realizing its vision of an Asia and Pacific region free of poverty, ADB tracks its performance on four levels.[36] At level 3, ADB's operational effectiveness is measured, among others, through the strategic focus of its operations. On environment, the indicator is "proportion of projects supporting environmental sustainability." With a baseline value of 17.4% in 2004–2006, ADB has set a target of 25% by 2010–2012. A project classification system guides ADB project team leaders in classifying projects with ES as a theme. The 2009 classification system allows as many as four themes to be selected based on their importance to the total project impact.

Projects with ES as a theme can be further classified under one of five subthemes, such as natural resources conservation (NRC), urban environmental improvement (UEI), eco-efficiency (EcE), global and regional transboundary environmental concerns (GRT), and environmental policy and legislation (EPL). This section presents ADB's progress in its environment operations to gauge its support for projects with ES as a theme.

Fig. 2.01: Projects with Environmental Sustainability as a Theme: Amount and Number of Projects, 2003–2010



[34] In Nepal, ADB will support the establishment and operation of integrated water resource management (IWRM) systems in river basins to help the government cope with serious water shortages and environmental degradation.

[35] The CPS cited climate change as a medium- to long-term risk for a low-lying atoll country like Tuvalu.

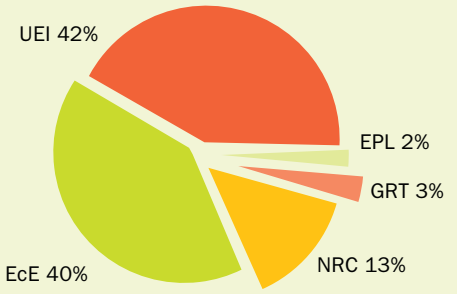
[36] Based on ADB Results Framework. Philippines (2008), ADB performance is measured at Level 1: Asia Pacific outcomes; Level 2: Contribution to Country Outcomes: Outputs; Level 3: Organizational Effectiveness; and Level 4: Operational Efficiency.

From 2003 to 2010, the number and value of loan and grant projects with ES as a theme continued to increase steadily (Figure 2.01). Fifty-three such projects totaling about $4.9 billion were approved in 2010, representing nearly a 40% increase in number over 2009, and the highest since 1995. The number of ES projects approved in 2010 pushed up the average proportion of such projects to 35% from 2008 to 2010, exceeding ADB's 3-year rolling average target of 25% in 2010–2012. The proportion of such projects with ES as a theme compared with the annual ADB-wide total, in amount, shows a marked upward trend, from a low of 5% in 2003 to a high of 38% in 2010 (Figure 2.02).

In 2008–2010, there were 117 projects with ES as a theme, with a total value of $11, 852 million. Compared with the figures spanning a longer period from 2003–2007, projects in 2008–2010 doubled in number and almost tripled in value. This trend indicates a recent dramatic increase in projects approved by ADB with ES as a theme. Appendix 3 lists the projects approved by ADB from 1995 to 2010.

Top three environmental subthemes. From 2003 to 2010, the majority of projects supporting environmental sustainability as a theme focused on urban environmental improvement projects (42%), projects using clean energy (40%), and natural resource conservation projects (13%) (Figure 2.03). Projects that address global and regional transboundary environmental concerns and environmental policy and legislation comprise 3% and 1% and continue to trail behind. The

Fig. 2.03: Projects by Environmental Subtheme, 2003–2010: Percent of Cumulative Total (Value)



UEI - urban environmental improvement; EcE - eco-efficiency; NRC - natural resource conservation; EPL - environmental policy and legislation; GRT - global and regional transboundary concern

Fig. 2.02: Projects with Environmental Sustainability as a Theme, 2003–2010 Percent of Annual Total Approvals (Value)

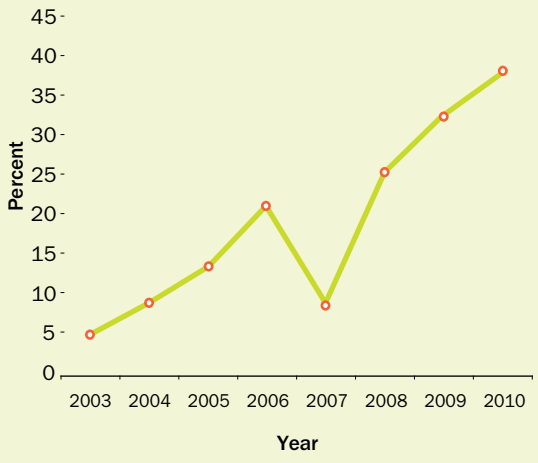
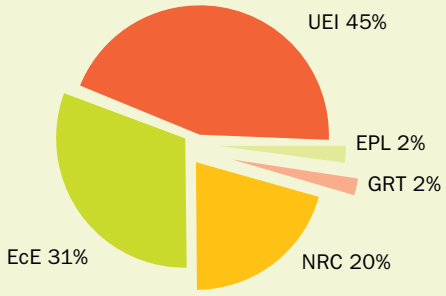
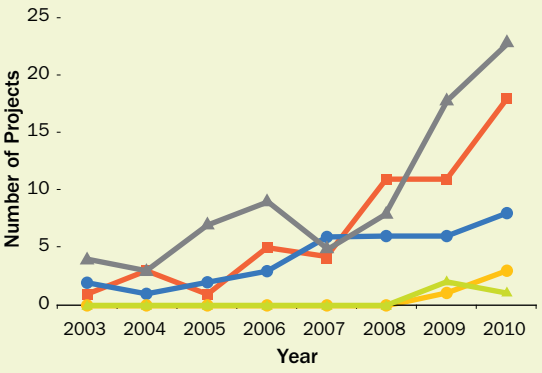


Fig. 2.04: Projects by Environmental Subtheme, 2003–2010: Percent of Cumulative Total Approvals (Number)



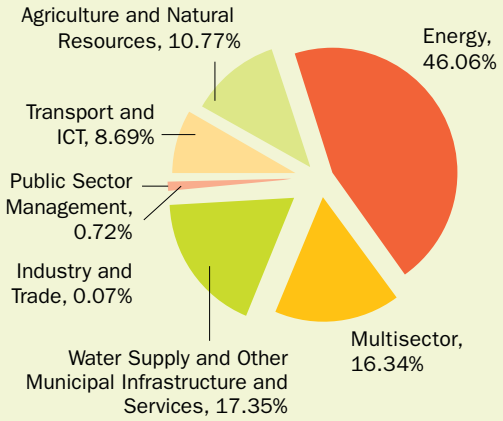
UEI - urban environmental improvement; EcE - eco-efficiency; NRC - natural resource conservation; EPL - environmental policy and legislation; GRT - global and regional transboundary concern

Fig. 2.05: Lending Trends by Environmental Subtheme, 2003–2010 (Number)



UEI - urban environmental improvement; EcE - eco-efficiency; NRC - natural resource conservation; EPL - environmental policy and legislation; GRT - global and regional transboundary concern

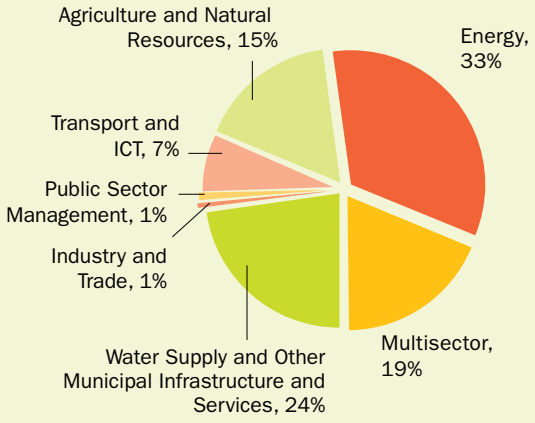
Fig. 2.06: Projects with Environmental Sustainability as a Theme by Sector, 2003–2010: Percent of Cumulative Total Approvals (Value)



proportion in terms of number of projects follows a similar pattern as seen in Figure 2.04. Investments for urban environmental improvement and clean energy show sharp increasing trends compared with those for other environmental subthemes (Figure 2.05).

Top four sectors. Based on cumulative loan amounts for 2003–2010, the energy sector registered the highest proportion in investment volume (46%), followed by water supply and other municipal infrastructure and services (17%), multisector (16%), and agriculture and natural resources (11%) (see Figure 2.06). For the first time, transport and information and communication technology (ICT) in view of sustainable transport projects, comprise some 9% of the total investment volume.

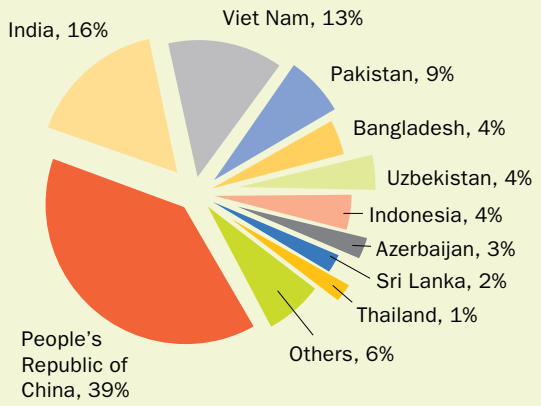
Fig. 2.07: Projects with Environmental Sustainability as a Theme by Sector, 2003–2010: Percent of Cumulative Total (Number)



In terms of proportion of projects by number, a similar pattern is observed as discussed above: the energy sector leads (33%), followed by water supply and other municipal infrastructure and services (24%), multisector (19%), agriculture and natural resources (15%), transport and ICT (7%), and public resource management and industry and trade (1% each) (Figure 2.07).

Top 10 borrowing DMCs. The top 10 borrowing countries in terms of cumulative amount of approved projects (in descending order) are the PRC, India, Viet Nam, Pakistan, Bangladesh, Uzbekistan, Indonesia,

Fig. 2.08: Top 10 Borrowers for Projects with Environmental Sustainability as a Theme 2003–2010: Percent of Cumulative Total Approvals



Azerbaijan, Sri Lanka, and Thailand (Figure 2.08). Out of the total cumulative amount for projects with ES as a theme from 2003 to 2010, the PRC had 39% of the total, followed by India with 16%. Viet Nam, which ranked sixth as of 2008, now occupies the third highest slot with 13% of the total.

The PRC borrowed mostly for projects involving the use of clean energy sources (wind, biomass, and hydropower) and energy-efficient technologies. It also borrowed for multiple urban environmental improvement projects and a growing number of projects promoting improved natural resource management and sustainable urban transport. India borrowed mostly for urban environmental improvement and recently for projects using renewable energy (biomass, wind, and hydropower) and thermal power projects, with some using supercritical steam technology. Viet Nam borrowed for natural resource conservation and sustainable urban transport (mass rapid transit) projects. Pakistan borrowed for projects using renewable energy sources and involving energy-efficient technologies. Indonesia borrowed for clean energy and urban environmental improvement projects. See Appendix 3 for the list of projects.

The following subsections present ADB's support for projects with ES as a theme in different sectors. ADB's support for these projects in the context of its programs and initiatives is presented in more detail in Chapter III.

1. Water Supply and Other Municipal Infrastructure and Services Sector

Projects in this sector aimed to upgrade environmental and public health conditions through improved water supply, drainage, and sanitation facilities, coupled with

Box 2.01: SRI 2477: Dry Zone Urban Water and Sanitation (Loan approved in 2008 for $59.78 million)

Sri Lanka's northern dry zone receives little rainfall, mostly during the short winter monsoon. As water supply augmentation is considered in emerging regional centers, wastewater and septage management must be addressed as an integral part of the solution. The project covers:

(i) rehabilitation, expansion, and development of water and sanitation infrastructure for major towns in the northwestern dry zone;
(ii) improvement of water resource management, coordination, and planning ability;
(iii) strengthening the institutional capacity for project management and implementation activities;
(iv) supporting the development of river basin plans in project areas, promoting the integrated water resource management principles and healthy rivers, and conserving and improving associated watersheds, wetlands, and ecosystems; and
(v) supporting local authorities in project districts in preparing by-laws, and implementing rules and regulations to monitor and control water abstraction and prevent groundwater contamination.

Box 2.02: KGZ 2556: Issyk-Kul Sustainable Development Project (Loan approved in 2009 for $16.5 million)

Lake Issyk-Kul in the Kyrgyz Republic is the world's second largest saline lake (a Ramsar site) and a UNESCO-designated biosphere reserve. The project is the first phase in a longer-term initiative by ADB to support environmental management and to improve urban service delivery in the Issyk-Kul *Oblast* covering the cities of Balykchy, Cholpon-Ata, and Karakol.

The project will (i) improve urban infrastructure, including sewerage and sanitation, solid waste management, water supply, and community upgrading; and (ii) improve service delivery through better enterprise resource management;

Solid waste management includes re-engineering waste dumps into sanitary landfills and closing existing dumps. Opportunities for public–private partnerships in the water supply and sanitation sector will also be improved through development of performance-based service contracts.

Box 2.03: PAK 2704: Zorlu Enerji Power Project (Loan approved in 2010 for $36.8 million)

The project is Pakistan's first privately financed wind power project to be constructed under its 2006 Renewable Energy Policy. It is expected to catalyze private sector investment in Pakistan's renewable energy sector.

The project will:

(i) involve the construction, erection, and operation of a 56.4-megawatt (MW) wind power farm in southern Sindh;
(ii) avoid an annual greenhouse gas (GHG) emission of 86,024 tons of CO_2; and
(iii) produce electricity at an average of 158.8 gigawatt-hours (GWh) per annum over a 20-year concession period.

Project success will send a signal to Pakistan's power sector market that independent power production using wind power is attractive for private sector investment and financing.

improving capacity in urban management. Environment mainstreaming in this sector is reflected in the use of integrated project designs to reduce pollution of water resources by pairing the water supply component with a sanitation component, including infrastructure development for sewerage systems. During 2008–2010, there were four such projects, two in Sri Lanka (Box 2.01), and one each in Fiji and Azerbaijan. Solid waste management components (Box 2.02) were also included in these projects and aim at improving urban environmental management and reducing the vulnerability of people to pollution-related diseases and groundwater contamination (two in India, one each in the Kyrgyz Republic and Nepal).

2. Energy Sector

Project design in this sector continued to focus on investments for (i) power transmissions and distribution and sector reform in power utilities, (ii) renewable energy sources, (iii) use of cleaner technology, and (iv) energy efficiency. This sector dominated the total number of projects for 2008–2010. The thrust in this sector is to provide reliable, adequate, and affordable energy in an environmentally sustainable way. A number of projects promote increased renewable energy sources in the power generation mix, thereby helping increase energy diversification in an environmentally sustainable manner. The PRC (three projects), India (two projects), and Pakistan (one project) have wind power projects (Box 2.03) for this period. Other types of renewable energy sources are also starting to appear, including small hydropower. Only one DMC (Thailand) had a solar power project (Box 2.04).

In three countries (India, PRC, and Viet Nam), energy-efficient technologies are being used in large coal-fired power plants. These are based on supercritical steam technology, circulating fluidized bed boiler technology,

Box 2.04: THA 7314: Bangchak Solar Project (Loan approved in 2010 for $59.78 million)

The project is a renewable energy source that will use innovative thin-film photovoltaic technology. It is a 55-megawatt peak (MWp) solar power generation plant in the Lopburi province of Central Thailand, and is expected to be one of the largest solar photovoltaic projects in the world.

The project will:

(i) support the government's strategy of promoting renewable energy and diversifying its energy mix;
(ii) use 542,000 solar photovoltaic panels and associated power equipment; and
(iii) cause CO_2 emission reduction of over 50,000 tons/year during its first 10 years of operation.

The project will be the first demonstration of the profitability and sustainability of a large-scale private solar project to meet power needs in Thailand, a model that can be replicated by other private sector investors in Thailand and other DMCs.

Box 2.05: PRC 2616: Tianjin Integrated Gasification Combined Cycle (IGCC) Power Plant Project (Loan approved in 2010 for $235 million)

The PRC is the world's largest coal producer and consumer, as well as a net energy importer, mainly of oil and gas. Improved energy efficiency in electricity generation through advanced coal-fired power plants is a key priority for lowering emissions and improving energy security. The internationally available and more advanced clean coal technologies such as IGCC, which potentially offer even higher efficiency and far superior emission performances than advanced supercritical and USC plants, are not yet being used in the PRC.

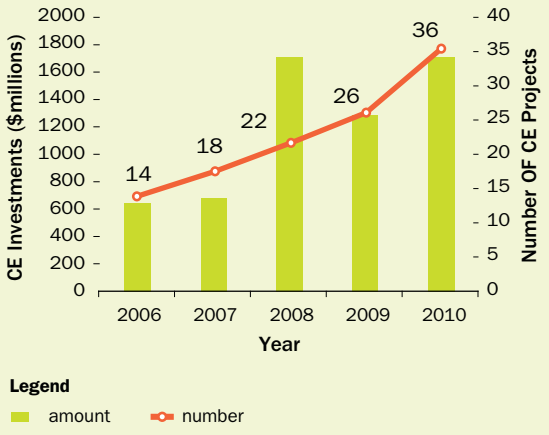
The project involves:

(i) constructing and operating an IGCC power plant of 250 MW capacity in Binhai New Area, Tianjin for generating 1,470 GWh of electricity annually, which will be sold to the Northern China Grid Company Limited through a 220-kilovolt interconnecting transmission line;
(ii) adequate capacity in project management, safeguard compliance, and operation and maintenance; and
(iii) capacity development for obtaining carbon offset revenues from IGCC plants.

and integrated gasification combined cycle (IGCC). A notable trend in the energy sector of the PRC is the closure of small and inefficient coal-fired power plants[37] and the construction of large plants with advanced technologies, including one using IGCC. In 2010, ADB approved funding for the first IGCC clean coal project in the PRC. This is the most efficient and least-polluting technology using coal currently available commercially. The project will open opportunities for combination with a demonstration project on CO_2 capture and storage (CCS) to cut emissions drastically (Box 2.05).

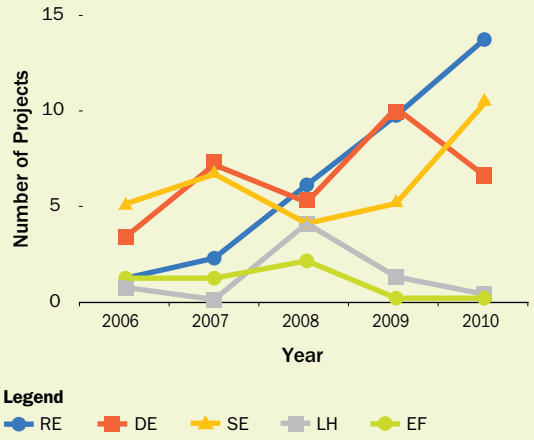
The period 2008–2010 registered a sharp rise in the number and volume of ADB clean energy (CE) projects (Figure 2.09). While the combined number of CE projects in 2008–2009 increased by 50% compared to 2006–2007, its aggregate total in amount have more than doubled ($3,065.9 million compared to $1,325.9 million). The sharp

Fig. 2.09: Clean Energy Projects(2006–2010)



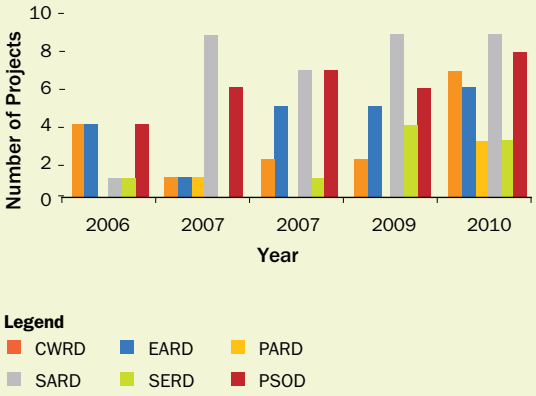
[37] Over 500 inefficient small thermal generating units, with the combined generating capacity of 14.4 GW, were decommissioned and resulted in significant reduction in coal consumption, greenhouse gas, and other pollutant emissions, and impressive improvement in energy efficiency. Source: Jun Tian. 2008. *How the People's Republic of China Is Pursuing Energy Efficiency Initiatives: A Case Study*. ADB.

Fig. 2.10: Clean Energy Project Trends by Type



RE=Renewable Energy; DE=Demand-side Energy Efficiency; SE= Supply-side Energy Efficiency; LH=Large Hydropower; EF= Efficiency in Fossil Fuel

Fig. 2.11: Number of Clean Energy Projects – by Region



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

rise was due mainly to projects focusing on renewable energy, demand-side energy efficiency, supply-side energy efficiency, and large hydropower projects. In 2009 alone, 20 CE projects (or 77% for the year) using renewable energy sources, and with demand-side energy efficiency features, were approved. There was a nearly 40% increase in the number of CE projects in 2010.

Similar to the 2006–2007 period, energy sector projects (67% of the total) dominated the CE projects in 2008–2009. It was trailed by the multisector, water supply, and transport sectors with 12%, 12%, and 8%, respectively. In 2010, the energy sector again dominated the CE project distribution with 83% of the total number of projects. In terms of CE project types, renewable energy projects showed a consistent increase, followed by supply-side energy efficiency projects (Figure 2.10).

The volume of operations departments' CE projects varied during 2008–2010. The South Asia Department (SARD) led (32%, 35%, and 25% for consecutive years), closely followed by the Private Sector Operations Department (PSOD) (32%, 23%, and 22%) which is trailed by the East Asia Department (EARD) and the Central and West Asia (CWRD) (Figure 2.11). The PRC had the most number of CE projects (27% of the total or 23 projects) and was closely followed by India (19% or 16 projects) and Pakistan (8% or 7 projects).

3. Agriculture and Natural Resources Sector

This sector focused on natural resource management and included rural livelihood improvement as components focusing on ecosystem conservation and sustainable land and water resource management (Box 2.06). This focus is in line with both ADB's *Operational Plan for Sustainable Food Security*[38] and ADB's *Water Policy.*[39] The link between environmental protection

[38] ADB's *Operational Plan for Sustainable Food Security in Asia and the Pacific* (2009) cites (i) improved management of natural resources (IWRM), (ii) climate change adaptation, and (iii) improved water productivity as some of ADB's main contributions to sustainable food security.

[39] ADB's water policy promotes (i) IWRM, (ii) environmental protection, and (iii) sustainable use of water resources.

Box 2.06: IND 2679: MFF-Sustainable Coastal Protection and Management Investment Program—Tranche 1 (Loan approved in 2010 for $51.56 million)

The investment program will address immediate coastal protection needs and coastal instability using environmentally and socially appropriate solutions in the states of Goa, Karnataka, and Maharashtra. Target is 150 km of coastline with community and private sector participation. Project 1 shall meet the requirements for 10 km of the coast.

The project will:
(i) develop sustainable plans and management for shorelines;
(ii) reduce coastal erosion and instability;
(iii) adopt softer options such as artificial reefs, beach nourishments, and dune management; and
(iv) enhance capacity for shoreline planning and development.

The three states will take steps toward encouraging private sector investments in coastal protection and management, including putting in place enabling policies and guidelines for private sector participation in coastal protection and management, when feasible.

Box 2.07: PRC 2436: Ningxia Integrated Ecosystem and Agricultural Development Project (Loan approved in 2008 for $100 million)

The project will rehabilitate the ecosystems and increase rural incomes in the Yinchuan area, covering 3,655 km^2 of the oasis of the Yinchuan Plain and extending into the Helan Mountains to the west of the Yellow River in Ningxia Hui Autonomous Region.

The project will:
(i) reform enabling policies and regulations, as well as build institutional, regulatory, and policy capacity to combat land degradation through an integrated ecosystem management approach;
(ii) demonstrate measures to achieve improved water and land use planning and management;
(iii) support sustainable rural livelihoods in poor communities through contracts with commercial enterprises;
(iv) provide support measures to protect 15 globally threatened species (with a Global Environment Facility grant); and
(v) promote sustainable resource use and protect and conserve wetlands, grasslands, transboundary flyways, and cultural sites through a market-based approach.

Use of an integrated ecosystem management approach shall emphasize the links between natural ecosystem capacities and socioeconomic activities, and shall seek to holistically rehabilitate damaged ecosystem services and functions by tackling the root causes of damaging practices, including reduction of rural poverty.

and poverty reduction was prominent in projects that involved environmental management of ecosystems along with activities that improved rural incomes (two projects in the PRC and one in India).

In the PRC, one project emphasized the use of technologies and practices to promote environmental sustainability in farming. The aim is to help reduce rural poverty and develop a sustainable agriculture sector through the transition to high-value agricultural production (Box 2.07). Water resource projects aim to sustain and increase agriculture production (five out of 16 projects for this sector). A watershed management component was also included in one project to improve project sustainability.

4. Transport Sector

Sustainable transport projects[40] began to appear in 2009 with the introduction of a bus rapid transit (BRT)[41] project in the PRC

[40] ADB's Sustainable Transport Initiative (STI) defines a sustainable transport system as one that is accessible, safe, environment-friendly, and affordable. Source: ADB. 2010. *Sustainable Transport Initiative – Operational Plan*. Manila.

[41] BRT is an urban mass transport system using buses to provide low-cost, efficient, flexible, and environment-friendly transport. For the Lanzhou BRT, a state-owned company and current bus operator will use the BRT lanes with existing buses that run on compressed natural gas.

Box 2.08: PRC 2601: Lanzhou Sustainable Urban Transport Project (Loan approved in 2009 for $150 million)

This is ADB's first project to support bus rapid transit in the PRC, and is part of ADB's initiative to support greener, more sustainable transport. It includes support for an application to use the Clean Development Mechanism of the Kyoto Protocol.

The project will:

(i) reduce the energy consumption and CO_2 emissions needed to meet the demand for public transport;
(ii) generate certified emission reductions;
(iii) increase average bus speeds on the BRT corridor;
(iv) shorten the average travel time;
(v) lower accident rates for vehicles and non-motorized transport; and
(vi) use an advanced environmental monitoring system consisting of monitoring stations and a data processing center that will monitor air pollutants (nitrogen dioxide, sulfur dioxide, and suspended particulate matter).

Box 2.09: NEP 2656: Kathmandu Sustainable Urban Transport Project (Loan approved in 2010 for $10 million)

The project will improve the quality of urban life in the capital city of Nepal by delivering a more efficient, safe, and sustainable urban transport system.

The project will holistically integrate the following components:

(i) a plan to rationalize and upgrade the existing public transport network, tested through the implementation of pilot routes provided with electric vehicles;
(ii) traffic management work and measures that will enable heritage routes in the city center to be pedestrianized and improve general walking conditions; and
(iii) improvement of air quality monitoring.

By 2018, CO_2 emissions and other air pollutants in Kathmandu valley are expected to decrease by 20% from the present baseline.

(Box 2.08). Two sustainable transport projects were also approved in 2010 for Georgia and Nepal (Box 2.09). Other ADB-approved projects aimed to (i) use non-motorized transport, (ii) modernize trolleybus services in major arteries of the city, (iii) improve walkability in the city center, and (iv) introduce a public transport fleet of electric or lower emission vehicles. These projects are in line with the Sustainable Transport Initiative's Operational Plan that calls for mainstreaming sustainable transport and building ADB's capacity to undertake sustainable transport operations for 2010–2011.

Aside from improving the transport situation, these projects aim to reduce air pollution. The BRT project, in particular, aims to generate certified emissions reductions and therefore includes an advanced environmental monitoring system with air quality sensors. Other transport projects with ES as a theme included railways improvement, new mass rapid transit, expressways, and road rehabilitation.

5. Multisector

Multisector projects continued to provide an integrated approach to addressing environmental issues in a wider context, particularly in urban development. The approach for urban development remains consistent with ADB's Urban Sector Strategy.[42] Integrated projects, in particular, continue to strengthen urban services and infrastructure, reflecting the need to combine environmental improvements with urban development.[43]

[42] ADB's Urban Sector Strategy (1999) identifies urban infrastructure and services (i.e., institutional strengthening and capacity building, water supply, sanitation and solid waste, urban transport, urban housing, and urban land management) as one of the core sectors of urbanization.

[43] In 2006, ADB's Medium Term Strategy II (2006-2008) raised an urgent concern to address the requirements for urban infrastructure (water supply, sanitation, waste management, and urban transport) in the wake of rapid urbanization.

Box 2.10: PRC 2428: Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin Project (Loan approved in 2008 for $100 million)

This project is an example of developing multi-sectoral investments in a basin with a unified goal of improving the basin's environmental conditions. Project activities aim at promoting sustainable ecosystem and water resources management with emphasis on biodiversity conservation, urban development, and rural livelihood programs.

The project will implement:

- 22 subprojects of seven different categories on wastewater treatment plants, water supply systems, reforestation; urban flood management, integrated water management, solid waste management, and clean energy development; and
- biodiversity conservation to support the proposed Global Environment Facility-financed activities.

The Clean Development Mechanism subproject will reduce sources of air and water pollution by using geothermal resources for additional space heating, replacing use of 60,000 tons of coal during winter.

Multisector type of projects support investments across many subsectors, such as solid waste management, water supply, drainage, urban transport, urban roads and bridges, slum improvement, environmental sanitation, and sewerage and wastewater management. These projects also address environmental problems in a river basin context. Three projects in the PRC are using an integrated approach to address constraints in various aspects, such as flood management, wastewater, environmental management, and ecosystem conservation (Box 2.10).

Grants were used to help achieve environmental sustainability in a wide range of activities, from managing natural resource to addressing climate change issues. These include linking livelihood in rural areas to natural resource protection by helping the poor establish sustainable livelihoods, adopting sustainable farming practices, sustainable forest management, biodiversity conservation, and community-based natural resource management.

Grants were used to supplement loan projects to address constraints to growth, such as access to improved urban environmental infrastructure and flood control and expanded access to rural water supply and sanitation. Grants were also provided to DMCs to address climate change issues, including: (i) energy efficiency, such as in projects to replace incandescent light bulbs; (ii) sustainable application of groundwater through conservation techniques; (iii) using new technologies for climate change mitigation, such the use of innovative and advanced clean coal technology with the potential for large GHG emission reduction; and (iv) sustainable transport.

C. Supporting Technical Assistance Projects with Environmental Sustainability as a Theme

The total number of technical assistance (TA) projects with ES as a theme has sharply increased in recent years (Figure 2.12). From 2008 to 2010, the total number of TA projects reached 188, with a total value of $198 million. For TA projects, the energy and agriculture sectors had the largest number (26% each), followed by water supply and other municipal infrastructure (15%), multisector (14%), transport (6%), public sector management (5%), and others (2%).

The proportion of TA projects with ES as a theme compared with the annual ADB-wide total in amount rose sharply in 2009 and 2010 (Fig. 2.13). The list of TA projects with ES as a theme approved from 2003 to 2010 is in Appendix 4.

Fig. 2.12: Technical Assistance (TA) with Environmental Sustainability as a Theme: Amount and Number of TA Approved, 2003–2010

Fig. 2.13: Technical Assistance (TA) with Environmental Sustainability as a Theme: Percent of Annual Total TAs Approved (Amount), 2003–2010

TA projects continued to be used for capacity development of countries and subregions, project preparation, and policy and advisory activities. Policy and advisory technical assistance (PATAs) were utilized for national level activities, such as for the preparation of national management strategies, strategic frameworks, policy recommendation, and programs coordinated at the national level. Capacity development technical assistance (CDTAs) were used to strengthen specific institutions under well-defined policy, regulatory, and institutional frameworks by (i) building institutional capacity for planning, budgeting, and implementation; (ii) strengthening the information base for decision making; and (iii) developing specific methodologies. Project preparation technical assistance (PPTAs) financed the preparation of proposed projects.

TA projects have greatly helped in intensifying the efforts of DMCs to address climate change (Box 2.11). These projects contributed to the development of appropriate responses to the impacts of climate change and were also designed to enhance the climate resilience of programs, plans, and policies by building institutional capacity for planning, budgeting,

Box 2.11:TA 7575-REG: Determining the Potential for Carbon Capture and Storage in Southeast Asia (TA approved in 2010 for $0.9 million)

The technical assistance will help expand the geographical scope of ADB's support for carbon capture and storage (CCS) as a way of mitigating carbon emissions. The governments of Indonesia, the Philippines, Thailand, and Viet Nam have formally indicated their interest in participating in this regional activity. It builds on ongoing CCS activities being supported by ADB in India and the PRC.

Activities include:

(i) identifying opportunities for public and private sector investments in CCS in the focus countries;
(ii) identifying priority technologies and sites for demonstration projects, and requirements for further research and due diligence; and
(iii) developing draft and final road maps for CCS demonstration in the focus countries.

Box 2.12: TA 7509-LAO: Capacity Enhancement for Coping with Climate Change (TA approved in 2010 for $3.1 million)

Translating climate change strategies, plans, and programs into concrete action has been difficult, due to constraints on human resources and institutional, technical, and financial capacities in the Lao PDR. The proposed TA will address these constraints by providing policy support to the National Climate Change Office and institutions responsible for each technical working group, in order to effectively implement the national strategy and action plan on climate change.

The technical assistance will:

(i) take a holistic view of adaptation, including strengthening the country's access to financial instruments available under the United Nations Framework Convention on Climate Change and the Kyoto Protocol, such as the Least Developed Countries Fund and Adaptation Fund;
(ii) engage the technical working groups in developing pragmatic work plans to realize the national climate change strategy;
(iii) pilot activities for coping with droughts in a northern province and floods in a southern province;
(iv) use an ecosystem-based approach to climate change adaptation in pilot activities; and
(v) include public awareness programs on climate change.

and implementing climate change actions. An example is the proposed CDTA in the Lao PDR[44] on capacity enhancement for coping with climate change. This project will provide policy support to institutions and implement pilot adaptation activities in the water, agriculture, and forestry sectors (Box 2.12).

In the areas of water resources and agriculture, TA projects addressed the impacts of climate change on food production and the need for long-term resilience of irrigated agriculture.

Box 2.13: TA 7261-PRC: Strategy for Drought Management (TA approved in 2009 for $0.63 million)

Droughts have seriously affected daily lives and socioeconomic activities in the PRC, particularly in poorer areas, and have caused about 48% of the country's total direct economic losses. The technical assistance aims for improved and sustainable drought management in the PRC with the adoption of an integrated drought management strategy.

The TA will have several activities, including

(i) reviewing historical drought situations, including their social, economic, and environmental impacts, and exploring key problems and changing drought patterns;
(ii) conducting detailed case studies in selected drought-prone provinces with different climatic and socioeconomic characteristics; and
(iii) conducting pilot tests for 8 months of successful international drought management practices in the selected provinces, and assessing the feasibility of adopting these practices for the long term.

An example is a PATA in Indonesia[45] for the institutional strengthening of its water resources sector. The project will undertake a detailed analysis of the irrigation subsector, taking into account issues on climate change and food security. Similarly, in Central and West Asia, a regional CDTA on water and adaptation intervention will introduce measures to adapt to changing hydrological regimes and build climate resilience against anticipated disaster scenarios in target watersheds[46] (see also Box 2.13). In Tajikistan, a TA project[47] was approved to help improve the government's ability to make informed decisions on adaptation

[44] ADB. 2010. *Technical Assistance to Lao PDR for Capacity Enhancement for Coping with Climate Change*. Manila. (TA 7509)

[45] ADB. 2010. *Technical Assistance to the Republic of Indonesia for Institutional Strengthening for the Water Resources Sector*. Manila. (TA 7768)

[46] ADB. 2010. *Technical Assistance for Water and Adaptation Intervention in Central and West Asia*. Manila. (TA 7532-REG)

[47] ADB. 2010. *Technical Assistance to Tajikistan for Climate Resilience for Natural Resources Investments*. Manila. (TA 7599) Manila.

Box 2.14: TA 7326-SRI: Increasing Sri Lanka's Resilience to Climate Change (TA approved in August 2009 for $700,000)

In response to a request from the Government of Sri Lanka, in 2009, ADB initiated a technical assistance project, Strengthening the Capacity for Climate Change Adaptation. Financed under ADB's Climate Change Fund, the overall aim of the technical assistance was to increase Sri Lanka's resilience to climate change impacts, while pursuing sustainable economic development and sound environmental management, which has never been attempted on the island. In addition, the technical assistance will also stimulate improved effectiveness and better organization of stakeholders to address climate change adaptation in Sri Lanka.

A range of significant and groundbreaking outputs have been developed and disseminated through the technical assistance. These outputs include the National Climate Change Adaptation Strategy (NCCAS); Sector Vulnerability Profiles; an information, education, and communication (IEC) strategy; and a survey of public perceptions on climate change. The NCCAS lays out a prioritized framework for action and investment for 2011–2016 aimed at systematically moving Sri Lanka and its people toward a climate change–resilient future. The NCCAS supports Sri Lanka's national development agenda as articulated in the Mahinda Chintana. Thematic areas identified under this NCCAS include (i) strengthening national level climate adaptation planning and implementation capacity; (ii) ensuring that future investments and economic plans are climate resilient; (iii) systematically researching on climate change adaptation options and disseminating knowledge; (iv) increasing financing for climate change adaptation; and (v) informing and mobilizing stakeholders at multiple levels in support of climate adaptation impacts.

Several innovations, such as the development of Sector Vulnerability Profiles and sector-specific vulnerability mapping using geographic information systems, were pioneered through the technical assistance. The IEC strategy aims to mobilize the many stakeholder groups over the long term. The financing target of SLRs.47.7 billion (approximately $430 million) for adaptation interventions for 2011–2016 period was also measured and set within realistic limits.

ADB's technical assistance to the government has been timely and catalytic in paving the way for various stakeholders to organize themselves and constructively respond to climate change impacts.

to climate impacts by strengthening the ability of its hydro-meteorological and water sector institutions to anticipate such impacts and provide resiliency measures for vulnerable sectors and river basins. In Sri Lanka, ADB funded a technical assistance project to increase the country's resilience to climate change impacts, while pursuing sustainable economic development and sound environmental management (Box 2.14).

TA projects on climate change mitigation, mostly in the energy sector, covered sector planning, financing, energy infrastructure, energy efficiency and conservation, renewable energy, clean fuels, and capacity development. These projects help promote environmentally sound energy security and develop stable grids. Technical assistance projects were also used to promote knowledge sharing on renewable energy[48] to support the development of the Asia Solar Energy Forum (ASEF) for mainstreaming solar energy and associated technologies in the region.

One TA project in the PRC was designed to provide advisory assistance on financing to DMCs, particularly on financing mechanisms for energy efficiency and emission reduction in small and medium-sized enterprises (SMEs).[49] The project aims to identify major policy and financial market impediments to SME financing for energy efficiency and emission

[48] ADB. 2010. *Technical Assistance for Knowledge Platform Development for the Asia Solar Energy Initiative*. Manila. (TA 7613-REG)

[49] ADB. 2010. *Technical Assistance to the People's Republic of China for Innovative Financing Mechanisms for Energy Efficiency and Emission Reduction in Small and Medium-Size Enterprises*. Manila. (TA 7564)

reduction projects. It is expected to improve the capacity of government agencies, financial institutions, and SMEs in energy efficiency and emission-reduction financing. Another project in the PRC[50] will assist in the development of carbon financing with a study on the state of carbon finance, make recommendations on enabling policies, and create a road map for the establishment of the carbon finance center.

Technical assistance projects also opened new opportunities for efficient use of renewable energy on a larger scale by promoting innovative ideas and approaches, such as the use of smart grid technology[51] to improve capacity for grid integration of wind power plants and other intermittent renewable energy sources. On a regional scale, technical assistance projects also contribute to the promotion of low carbon practices and technologies and the strengthening of information exchange and knowledge sharing.[52]

CDTAs were also included in some loan projects to (i) assist DMCs in institutional capacity building to integrate environmental safeguards into the project cycle; (ii) promote IWRM and adaptation to climate change in the water sector; (iii) build environmental and social units in the executing agencies for hydropower projects; (iv) build environmental management capacity for waste-to-energy projects; (v) promote urban environmental health; and (vi) integrate environmental safeguards in the planning of small hydropower projects (Box 2.15).

Box 2.15: TA 7262-VIE: Capacity Building for Renewable Energy Development (TA approved in 2009 for $2.5 million)

The technical assistance supplements a loan project that will provide a reliable and affordable supply of electricity to remote communities through mini-hydropower plants and grid expansion. It will provide capacity building for regional and provincial staff to undertake mini-hydropower development in an environmentally and technically sustainable and socially inclusive manner..

The technical assistance will:
(i) assist in preparing the initial environmental examination and environmental management plan;
(ii) conduct an assessment of current institutional capability to implement the EMP, and propose any necessary capacity building program;
(iii) guide executing agencies in conducting consultations with groups to be affected by the project; and
(iv) train the executing agencies in (a) documenting the results of the consultation in the Initial Environmental Examination; (b) ensuring that the cost for implementing mitigation measures, the monitoring plan, and environmental management capacity strengthening activities are included in the subproject cost; and (c) preparing the terms of reference for any further detailed environmental assessments, if required, in consultation with all concerned.

D. Integrating Environmental Safeguards into ADB Operations

Environmental and social safeguards are a cornerstone of ADB's support for environmentally sustainable economic growth. In July 2009, ADB's Board of Directors approved the Safeguard Policy Statement (SPS), which came into effect in January 2010. The SPS builds upon the three previous safeguard policies on the environment, involuntary resettlement, and indigenous peoples, and brings them into a consolidated policy framework to enhance effectiveness and relevance.

[50] ADB. 2010. *Technical Assistance to the People's Republic of China for Study on Beijing Green Finance Development Strategy*. Manila. (TA 7589)
[51] ADB. 2010. *Technical Assistance to the People's Republic of China for Developing Smart Grid Technology for Efficient Utilization of Renewable Energy*. Manila. (TA 7721)
[52] ADB. 2010. *Technical Assistance for Promoting Renewable Energy, Clean Fuels, and Energy Efficiency in the Greater Mekong Subregion*. Manila. (TA7679-REG)

The overall objectives of the SPS are to avoid, or when avoidance is not possible, to minimize, mitigate, and compensate for adverse project impacts on the environment and affected people; and to help borrowers strengthen their safeguard systems and develop the capacity to manage environmental and social risks. The SPS lays out policy principles and outlines a set of specific safeguard requirements that ADB-supported projects are expected to meet. They cover: (i) environmental and social impact assessment, planning, and management; (ii) biodiversity and sustainable natural resources management; (iii) pollution prevention and abatement; (iv) occupational and community health and safety; (v) involuntary resettlement; (vi) indigenous peoples; (vii) physical cultural resources; and (viii) information disclosure, consultation and participation, and grievance mechanisms. ADB's approach to mainstreaming environmental safeguards in projects is described below.

The environmental assessment process. The process begins early in the project cycle 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, and monitoring; and the 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 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.

Table 2.01 Environment Categories of Projects (2003–2010)

	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
2009	15	40	26	13	94
2010	18	56	26	15	115
Total	**102**	**294**	**177**	**104**	**677**

Project classification. At the earliest stage of the project cycle, projects are classified according to the significance of their 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 (RSDD). Table 2.01 lists the number of projects classified under each category from 2003 to 2010. In terms of proportion of the annual total of approved projects, category B projects have the highest (45%), followed by category C (26%), category FI (16%), and category A (13%) (Fig. 2.14). During the past three years, the percentage of category A and C projects show slightly downward trends, while category B and FI projects show slightly upward trends (see Figure 2.15).

Fig. 2.14: Distribution of projects by Environment Category (2003–2010)

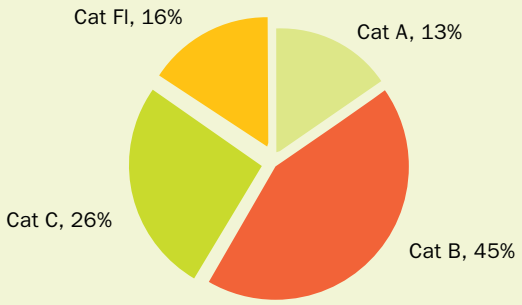
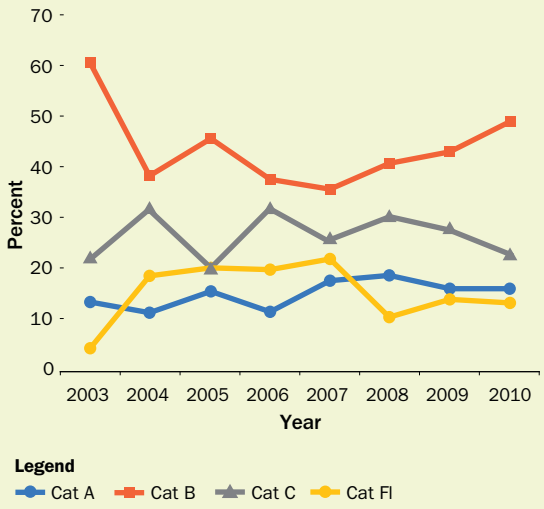


Fig. 2.15: Environment Categories of Projects (2003–2010)



1. Implementing the Safeguard Policy Statement

Since the SPS took effect in January 2010, ADB has made significant strides at the corporate level to ensure its sound implementation and smooth transition. To strengthen the internal safeguard review system, in January 2010, management issued the new Operations Manual Section F1 (OMF1) on safeguard review procedures, which have been fully aligned with ADB's business process. The OM prescribes the procedure and requirements that staff should follow at each stage of the project cycle.

To enhance staff resource and capacity, ADB has carried out extensive training of its staff prior to and after the SPS became effective. Nearly 680 staff members from headquarters and resident missions were trained. In line with the SPS, ADB's Work Program and Budget Framework 2010–2012 includes 38 new safeguard staff positions, starting with 18 authorized positions for safeguard specialists/officers in 2010.

To enhance awareness of DMC stakeholders, ADB held in-country briefing workshops in more than 10 countries in 2010, including Cambodia, India, Indonesia, the Lao PDR, Mongolia, Nepal, Pakistan, PNG, the PRC, the Philippines, and Viet Nam, and involving government staff, civil society representatives, and private sector clients. The SPS has been translated into nine local languages, including Bahasa Indonesia, Chinese, Dari, Hindi, Khmer, Lao, Russian, Sinhala, and Vietnamese.

2. Strengthening Country Safeguard Systems[53]

Strengthening country safeguard systems (CSS) has been a long-term priority of ADB and is one of the main objectives of the 2009 Safeguard Policy Statement. It is a means to enhance aid effectiveness by promoting country ownership, extending development impacts, making more efficient use of donor and DMC resources, and promoting donor cooperation. These objectives were strongly endorsed at High-Level Forums on Aid

[53] Country Safeguard Systems (CSS) is a country's legal and institutional framework, consisting of its national, subnational, or sectoral implementing institutions and relevant laws, regulations, rules, and procedures that pertain to the policy areas of environmental and social safeguards

Effectiveness in Paris in 2005 and Accra in 2008. Progress will be reviewed in Busan, the Republic of Korea, in November 2011.

From the time of SPS approval, ADB approved several important regional technical assistance (RETA) projects totaling more than $12 million. These include:

(i) TA 7566–REG: Strengthening and Use of Country Safeguard Systems ($5 million);
(ii) TA 7548–REG: Mainstreaming Land Acquisition and Resettlement Safeguards in the Central and West Asia Region ($5 million);
(iii) TA 7735–REG: Building Capacity for Environmental Prosecution, Adjudication, Dispute Resolution, Compliance, and Enforcement in Asia ($1 million);
(iv) TA 7548–REG: Improving the Implementation of Environmental Safeguards for ADB-Supported Projects in Central and West Asia ($0.8 million); and
(v) TA 7386–PRC: Strengthening Enforcement of Environmental Laws and Regulations ($0.3 million).

Under RETA 7566, approved in July 2010, a main outcome of the technical assistance is to strengthen CSS in one or more priority areas in each participating DMC. Several projects have already been approved[54] and several more are being processed. The 2011 pipeline includes more than 10 proposed subprojects from Cambodia, India, the Kyrgyz Republic, Mongolia, the PRC, the Philippines, and Viet Nam. Other subprojects (for Mongolia and Timor-Leste) are planned to be implemented in partnership with the United Nations Environment Programme (UNEP) and the Asian Environmental Compliance and Environment Network (AECEN). To further mobilize external funds for CSS capacity development activities, a background paper for a trust fund is also being drafted.

Through TA implementation and other channels, ADB continued to explore long-term joint programs with bilateral and multilateral development institutions to support the strengthening and effective implementation of country safeguard systems. In this regard, a joint ADB–World Bank regional training workshop on safeguards was held in Bangkok in July 2010. ADB will continue to work with the World Bank on joint programs for DMC training. Furthermore, in 2010, ADB organized a regional workshop on environmental impact assessment in Asia that explored good practices and capacity needs. Twenty countries and representatives from the World Bank and the United States Environmental Protection Agency (USEPA) participated in the workshop.

E. Generating and Disseminating Knowledge

Knowledge and capacity development are essential in scaling up ADB's environment operations. ADB continued to generate and disseminate knowledge solutions for use by its staff and stakeholders. With the understanding that ADB must play a bigger role in putting environment knowledge solutions to work in Asia and the Pacific, ADB approved *Enhancing Knowledge Management under Strategy 2020: Plan of Action for 2009–2011* in July 2009. The objective was to advance the knowledge management agenda under *Strategy 2020* by continually enriching both internal and external learning.

Following this plan of action, ADB continues to (i) sharpen the knowledge focus in ADB operations; (ii) empower Communities of

[54] These projects include: Strengthening Water Resources and Environment Agency Capacity to Implement Lao Resettlement Policies in the Lao PDR; Reform of Legal and Regulatory Framework and Enforcement for Environmental Impact Assessment in Mongolia; Environmental and Social Management Systems for Financial Intermediaries; Country Environment Safeguard Review for Papua New Guinea; Supporting and Strengthening Local Capacity for a Country Involuntary Resettlement Safeguard System in Sri Lanka; and Amending the 2003 Land Law and its Amending Decree in Viet Nam.

Practice (CoPs) for knowledge development and dissemination; (iii) strengthen external knowledge partnerships; and (iv) further enhance staff learning and skills development. These four pillars of knowledge management can be adapted to enhance environmental mainstreaming across ADB's operations and project portfolio.

Sharpening the knowledge focus in ADB operations. ADB continuously develop and disseminate new knowledge, as well as stimulate regional discussion, in a number of areas, including on various aspects of safeguard implementation, sustainable ecosystems management, and climate change. Several knowledge products were published in recent years, covering topics such as climate change and related issues, approaches to "greening" infrastructure projects, managing air and water pollution, approaches to ecosystem management, and environmental governance. Based on the list of ADB publications released during 2008 to 2010, climate change was the most frequently addressed subject (30% of the total number of publications), followed by "greening" infrastructure projects (17%), natural resource management (17%), and air/water quality management (11%). Appendix 5 lists ADB's recent knowledge products.[55]

One area of knowledge creation that ADB is starting to emphasize is climate change adaptation, in response to the great needs in the region to step up policy research, knowledge creation, and capacity building. ADB will continue to do this by supporting work on climate impact and vulnerability assessments; development and dissemination of adaptation tools and methods; economic analyses of climate impacts and responses; and enhanced access to, and practical application of, the growing body of knowledge on climate assessment and adaptation in DMCs.

Empowering Communities of Practice. The Environment Community of Practice (CoP) will continue to be the main mechanism in promoting environmental knowledge management in ADB. The Environment CoP was established to support ADB's operational emphasis on environment. Starting out as a network in 1998 and formalized in 2005, the CoP consists of an Environment Committee and the wider CoP. The Committee, which represents each of the operational departments, advises on emerging environment issues, sector/thematic work, knowledge products and services and human resource issues. The larger informal community of practice consists of staff interested in environment, climate change and other related topics.

The Environment CoP, in its role as the hub of environmental knowledge within ADB, will continue to develop new knowledge products and ensure that information is widely disseminated, including to resident missions and representative offices, through innovative yet accessible means. More specifically, the CoP will continue to (i) contribute to mainstreaming environmental sustainability through the CPS process; (ii) provide specialist inputs to projects, including external peer review of concept papers, support project preparation tasks, and assist project teams during processing; (iii) conduct peer reviews of EIAs for Category A projects and thematic studies; (iv) develop new focus areas of work in the environment sector; (v) disseminate best practices, project information, and new knowledge to the environment community through "green bag" seminars; (vi) enhance linkages with external networks and partners; (vii) advise on external learning events and facilitate engagement of ADB in important conferences (feedback to operations and its implications); (viii) facilitate participation in external partnerships; and (ix) identify and enlist expert resource persons to inform on important knowledge areas.

[55] Recently published knowledge products are accessible at http://www.adb.org/Environment/default.asp

Strengthening external knowledge partnerships. To complement ADB's core competencies and ensure targeted results, efforts will continue to focus on maintaining knowledge partnerships with environmental NGOs; civil society; other development institutions, including the United Nations and GEF; and the private sector. In partnership with United Nations Economic and Social Commission on Asia and the Pacific (UNESCAP) and UNEP, ADB is seeking to capture the Asian voice in preparations for the 2012 UN Conference on Sustainable Development, or Rio+20, through the *Green Growth, Resources, and Resilience* report under preparation. A preview of this report was discussed at the Sixth Ministerial Conference on Environment and Development in Kazakhstan in September 2010 and views are being reflected in the final report. This publication seeks to identify key priorities, policy bottlenecks, and quick wins, while pinpointing issues on which the region can lead the quest for greener, more inclusive, and resilient growth. Through such partnerships, ADB will endeavor to develop cutting-edge knowledge products, organize workshops and forums throughout the region, and develop country environmental analyses to inform decision making on environmental issues.

ADB also participated in international and regional conferences, such as the Sixth Ministerial Conference on Environment and Development in Asia and the Pacific, the Tenth Conference of the Parties to the United Nations Convention on Biological Diversity, Better Air Quality 2010 Conference, the 30th Annual Meeting of the International Association for Impact Assessment, and the 2010 United Nations Climate Change Conference in Cancun, Mexico.

Further enhancing staff learning and skills development. The Environment CoP will continue to play a key role in enhancing the knowledge of ADB staff and fostering environmental consciousness among ADB staff, which is instrumental in the overall effort to mainstream environment, including climate change, into ADB operations and business processes. Staff who wish to take advantage of opportunities to enhance their learning about the environment and climate change, for instance on environmental safeguard processes, or climate change methods for mitigation and adaptation, will continue to be supported through frequent in-house and external training seminars and workshops.

III. Initiatives and Partnerships

To help respond to the major environmental challenges faced by its DMCs, ADB launched several initiatives to implement its programs and guide its expanding environmental operations under Strategy 2020. Highlights of the thematic and subregional initiatives, including priorities for action based on the needs of DMCs and ADB's comparative strengths, are presented in this chapter. Also highlighted are the partnerships that ADB has forged and continues to strengthen, which are crucial in its efforts to advance its environment program.

A. Thematic Initiatives

ADB launched several environment-related thematic initiatives to help DMCs pursue a sustainable growth path. Initiatives to promote the expanded use of clean energy, encourage sustainable transport and urban development, and promote climate resilient development, all integral elements of ADB's climate change priorities are presented in this section. While many of these initiatives address problems at the global or regional level, they also aim to solve problems at the local level. Most of these initiatives have taken root in ADB, but others, such as managing land use and forests for carbon sequestration, a priority area included in ADB's climate change program, still require the needed foundation. Other ADB initiatives or programs at the regional or country levels are also discussed.

1. Clean Energy Program

The energy sector has always been a priority for ADB's lending programs. Rapid development of countries in the region has led to a high demand for energy to power industries and homes. Driven against this demand is the need for Asia to develop in a sustainable manner, even as the sector is dominated by fossil fuels. Also, there is a pressing need to intervene in behalf of the millions of the poor, who, in the midst of a booming region, still lack access to modern energy. ADB has responded, since the mid-1990s, with support in various forms to help DMCs mitigate GHG emissions. This support has now evolved into what is called ADB's Clean Energy Program (CEP) (Box 3.01).

ADB's CEP will (i) expand ADB's clean energy investments in smaller DMCs, (ii) mainstream clean energy in non-energy sectors, (iii) track the pipeline of clean energy projects, and (iv) monitor achievements against the level 2 target indicators of the Energy Policy. ADB uses a variety of financing instruments to support clean energy projects, including grant funding for studies and project preparation, lending

Box 3.01: Key Milestones of ADB's Response to the Climate Change Challenge

ADB has been assisting developing member countries (DMCs) address climate change for nearly 2 decades.

In 1995, ADB approved its Policy Initiatives for the Energy Sector, which aimed to integrate environmental considerations into energy sector activities. A regional technical assistance, Asia Least-Cost Greenhouse Gas Abatement Strategy (ALGAS), co-financed by ADB and the Global Environment Facility, improved the capacity of DMCs to prepare baseline inventories of GHG emissions and sinks to meet the requirements of the United Nations Framework Convention on Climate Change (UNFCCC).

In 2000, Energy 2000 aligned energy sector operations with the three pillars of its poverty reduction strategy. A follow-up support to ALGAS came through the Promotion of Renewable Energy, Energy Efficiency, and GHG Abatement Project, which supported investments in these technologies to increase the poor's access to energy services and help reduce GHG emissions.

In 2005, the Energy Efficiency Initiative (EEI) was launched to expand ADB's clean energy program. During this period, the operations department's capacity to develop clean energy projects was built, and new and innovative financing instruments for clean energy investments established. EEI set ADB's annual target for clean energy investment at $1 billion. The thrust to address climate change issues further intensified, due to heightened global awareness of the effects of climate change.

In 2007, ADB established the Clean Energy Financing Partnership Facility (CEFPF) to help DMCs improve their energy security and transit to low-carbon use. The CEFPF helped finance the EEI. In May 2008, ADB established the Climate Change Fund (CCF) to facilitate greater investments in DMCs to effectively address the causes and consequences of climate change. The clean energy investment target was surpassed with $1.69 billion in investments.

Still in 2008, operations departments prepared Climate Change Implementation Plans (CCIPs) to mainstream climate change considerations into their operations. Completed in 2009, the CCIPs reflected ADB's responses to climate change on the policy and institutional, organizational, and operational levels. While all the CCIPs use the country partnership strategies (CPSs) and country operations business plans (COBPs) as delivery vehicles for projects, the Pacific Department (PARD) followed up its CCIP with the preparation of a supporting action program, the Pacific Climate Change Program (PCCP). It shall serve as the main vehicle to implement PARD's CCIP in two phases.

In 2009, the Energy Policy was approved, listing as one of its pillars the "promotion of energy efficiency and renewable energy," and increasing the annual clean energy investment target to $2 billion by 2013. The clean energy portfolio reached $1.26 billion. EEI's role was redefined in 2009, and eventually evolved into the Clean Energy Program (CEP) in 2010. The CEP expanded clean energy investments to smaller DMCs, to demand-side clean energy components for projects in water supply and sanitation, urban, transport, agriculture, and other sectors.

In 2010, ADB adopted strategic priorities for climate change, which confirmed five region-wide priority areas for support. Thus, there will be greater focus on (i) expanding the use of clean energy, (ii) encouraging sustainable transport and urban development, (iii) managing land use and forests for carbon sequestration, (iv) promoting climate-resilient development, and (v) strengthening policies, governance, and capacities.

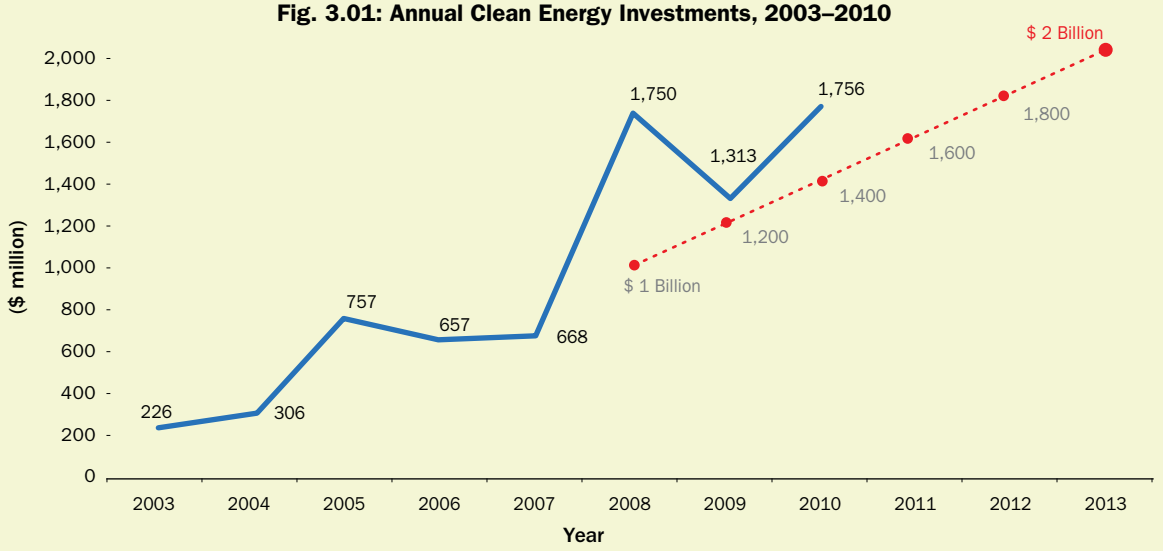
and risk enhancement, upfront purchase of certified emission reduction credits, and, where necessary, donor-funded grant components of investments to buy down the cost of projects.

a. Key Achievements

In 2010, the CEP reached $1.756 billion in approved projects, higher than its internal target of $1.4 billion, and came close to its new target of $2 billion a year starting in 2013 (Figure 3.01). The CEP now focuses on supporting clean energy in smaller DMCs and facilitates the adoption of low-carbon technologies throughout the region.

ADB's clean energy projects have resulted in significant levels of energy savings through enhanced efficiency, increased use of renewable

Fig. 3.01: Annual Clean Energy Investments, 2003–2010

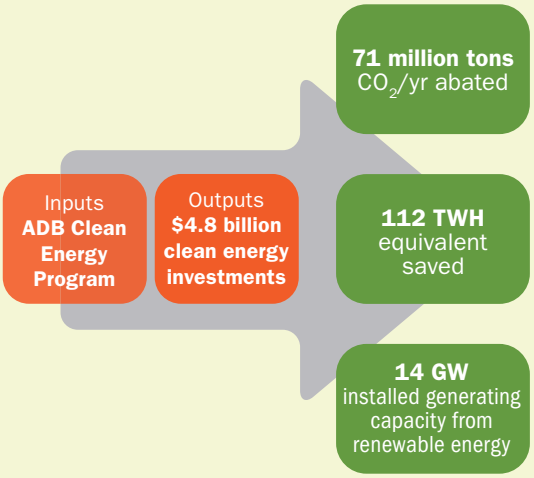


The solid blue line in the figure above tracks the volume of ADB's annual clean energy projects, while the dotted red line marks ADB's target of $1 billion from 2008 to 2012 and its $2 billion target starting in 2013.

sources, and avoided CO_2 emissions, as seen in Figure 3.02.

ADB's new technology-focused clean energy–related initiatives marked ADB's expansion into new areas beyond its usual areas of specialization which are finance and policy support. These areas are described below.

Fig. 3.02: Clean Energy Activities—Outputs and Outcomes, 2008–2010



Demand-side (end-use) energy efficiency. ADB is helping its DMCs achieve energy efficiency in the commercial, industrial, and residential sectors. By partnering with commercial banks and energy service companies, ADB is helping DMCs like Pakistan, the PRC, and Indonesia achieve greater energy efficiency in, respectively, the textile industry, cement industry, and food industry.

At the municipality level, ADB is working with the Philippines and Thailand to develop efficient street lighting, as well as energy efficiency retrofits in government buildings. Similar efforts are under way in Lao PDR and Viet Nam.

ADB has also supported the large-scale adoption of compact fluorescent lamps (CFLs) to improve energy efficiency. In the Philippines,

one project[56] is distributing 13 million CFLs to homeowners over 2 years (2010–2011). The expected benefits from this project include annual savings of up to $100 million in fuel costs and deferment of $450 million in investments needed to produce 450 MW of power supply. A similar project in Pakistan will distribute 30 million CFLs, resulting in 1,100 MW of avoided power generation. Efforts are under way in Nepal and Viet Nam to adapt the project design to country conditions.

Supply-side energy efficiency. Increase in supply-side energy efficiency is achieved by adopting new and efficient technologies, whether this increases efficiency at the point of power generation or in transmission. ADB has invested in improving municipal district energy infrastructure, reducing losses in power lines. Energy efficiency gains from reduced technical losses during generation, transmission, and distribution may make it unnecessary to construct new power plants, thereby avoiding GHG emissions.

ADB supports the construction of more efficient supercritical and ultra-supercritical coal-fired power plants, resulting in much fewer emissions than common conventional subcritical plants. As discussed earlier, ADB has also invested in integrated gasification combined–cycle (IGCC) technology, characterized by high electricity production efficiency and significantly reduced CO2 emissions, compared with traditional coal-fired power plants. Where feasible, it can be combined with carbon capture and storage technology, due to the relatively high CO2 concentration of the exhaust flue gas.

Renewable energy, fuel switching, and expanded access to low-carbon energy. ADB is working with DMCs to increase the proportion of renewable energy sources in their energy mix. More countries are mainstreaming clean energy and establishing the principle of priority dispatch, so that transmission systems give priority to renewable energy resources. ADB has invested in dedicated power lines for renewable sources, especially for lines linking hydropower to the main grid.

As part of the agenda set by its 2009 Energy Policy, ADB is looking to increase people's access to energy in ways that will contribute to inclusive and sustainable economic growth. ADB's Energy for All Partnership aims to increase access to affordable, clean, and reliable energy for 100 million people in Asia and the Pacific by 2015.[57] For instance, in the PRC, ADB has invested along with the government in small and medium-scale biogas generation for rural areas. In Indonesia, the use of agricultural waste to power palm oil mills and surrounding communities is being explored.

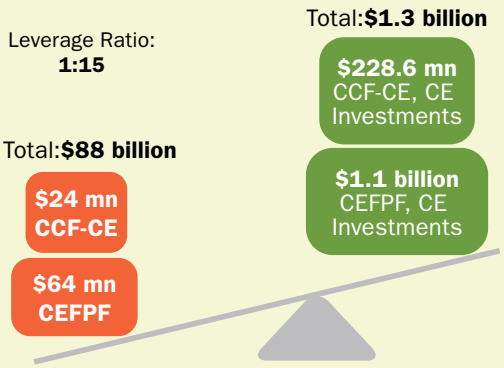
b. Financing Resources and Partnerships

ADB uses concessional funds to catalyze much-needed clean energy investments in the region, and leverages additional resources from the private sector (Figure 3.03). The Climate Investment Funds (CIF), established by the World Bank in partnership with regional development banks including ADB has pledges of about $6.5 billion and finances a range of ADB clean energy projects. The Clean Energy Financing Partnership Facility (CEFPF), established in 2007, finances the deployment of new, more efficient, and less polluting supply and end-use technologies, thereby helping DMCs improve energy security while transforming to low-carbon development. Under the CEFPF, the multi-donor Clean Energy Fund (CEF) is supported by the Governments of Australia, Norway, Spain, and Sweden; the individual donor Asian Clean Energy Fund (ACEF) is supported by the Government of Japan; and the Carbon Capture

[56] ADB. 2009. *Report and Recommendation of the President (ADF Grant): Grant 0142 Philippine Energy Efficiency Project.*

[57] ADB. 2009. *Energy for All Partnership Establishment Plan*. Manila.

Figure 3.03: CEFPF and CCF-CE Leverage Ratio (as of 31 December 2010)



CCF = Climate Change Fund – Clean Energy Development component, CE = clean energy, CEFPF = Clean Energy Financing Partnership Facility, mn = million

and Storage Fund (CCSF) is supported by the Global CCS Institute of Australia.

Meanwhile, the Climate Change Fund (CCF), established in 2008, facilitates greater investments in DMCs to address the causes and consequences of climate change, alongside ADB's own assistance in various related sectors. The CCF invests in projects that lead to GHG emission reductions and carbon sequestration, biodiversity conservation, and climate proofing of development plans, investments, and livelihoods.

c. Planned Activities

There is a high level of acceptance and enthusiasm for clean energy uptake among DMCs, as seen in the volume of clean energy projects. However, there is much room for improvement in the scaling up of technology transfer and deployment. ADB is strategically positioned to help transfer low-carbon technologies, and may implement various programs and approaches described below.

Exchange to Transfer Low-Carbon Technologies to Asia and the Pacific. This proposed exchange will accelerate the pace of technology transfer in the region through an assisted broker model that identifies partnerships between low-carbon technology buyers and sellers.

Carbon Capture and Storage (CCS). ADB has partnered with the Global CCS Institute-Australia and will assist DMCs with road maps for CCS demonstration projects, policies, and legal and regulatory frameworks.

Asia Solar Energy Initiative (ASEI). The ASEI will identify, develop, and implement 3,000 MW of solar electricity generation and associated smart grid projects over the next 3 years to accelerate solar energy's progress toward achieving grid parity.

Quantum Leap in Wind Power. This initiative will develop country-specific road maps for the large-scale deployment of wind power, and target the development of an additional 1 GW of installed wind power from 2010 to 2015 in priority DMCs such as Mongolia, the Philippines, Sri Lanka, and Viet Nam.

Small Wind Initiative. Through a regional technical assistance, ADB is exploring effective ways to utilize indigenous renewable energy resources to supply electricity to, and improve living standards in, remote communities.

Asia Climate Change and Clean Energy Venture Capital Initiative. This initiative is expected to accelerate technology innovation, transfer, and diffusion by providing both early stage finance and technical advice.

Renewable Energy Certificate. This market-based instrument, if implemented, is expected to create incentives for clean energy technology uptake by providing a production subsidy to electricity generated from renewable sources,

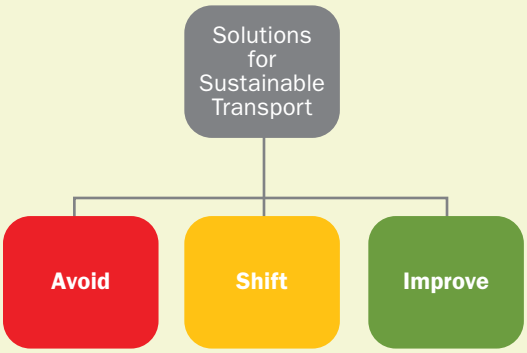
thereby also promoting renewable energy development.

Climate Public–Private Partnership Fund (CP3). ADB is working to establish this fund as an investment vehicle through which the resources of institutional private equity funds, such as pension funds, can be mobilized toward investment strategies for mitigating climate change.

2. Sustainable Transport Initiative

ADB has established the Sustainable Transport Initiative (STI) to align its transport operations with Strategy 2020 and provide technical and other resources to build a portfolio of enhanced lending and technical assistance to support sustainable transport. The STI is being implemented under the guidance of ADB's Transport Community of Practice.

Figure 3.04: Sustainable Transport Initiative Avoid–Shift–Improve Paradigm



- **Avoid** means reducing travel demand by integrating land use and transport planning.
- **Shift** means changing to other more energy-efficient modes of transport.
- **Improve** means using technologies that are more energy efficient, including improving vehicle standards, inspection, and enforcement; developing improved vehicle technologies and fuels; and improving transport efficiency using information technology.

The STI defines a sustainable transport system as one that is accessible, safe, environment-friendly, and affordable. From an environmental perspective, a sustainable transport system minimizes the use of land and emissions, waste, and noise. It (i) uses renewable resources at or below their rates of generation, (ii) uses nonrenewable resources at or below the rates of development of renewable substitutes, and (iii) limits emissions and wastes within the planet's ability to absorb them. Given the growing awareness that addressing transport emissions in Asia is crucial to the global CO2 mitigation effort, ADB is promoting a useful conceptual tool to guide its work at country and regional level through the "Avoid–Shift–Improve" paradigm (Figure 3.04) to reduce dependence on individual vehicles, as well as to ensure a high level of mobility while minimizing local and GHG emissions.

a. Key Achievements

As a lead multilateral development bank (MDB) for transport and climate change, ADB has made significant progress toward its advocacy of promoting sustainable and low carbon transport systems in developing countries. Important milestones include (i) the Bellagio Declaration on Transportation and Climate Change; (ii) the Multi-stakeholder Partnership on Sustainable Low Carbon Transport; (iii) providing expert guidance and inputs to the United Nations Department of Economic and Social Affairs (UN-DESA) Commission on Sustainable Development (CSD), which includes transport as one of its focus areas under CSD18/19 in 2010–2011; and (iv) a Memorandum of Understanding with Inter-American Development Bank, Korea Transport Institute, and Institute for Transport Development and Policy to promote sustainable, low-carbon transport programs and projects in DMCs.

A strategic framework for regional sustainable transport defined a new paradigm for urban

transport development. "Rules of engagement" for sustainable transport solutions and services have been set, and clear criteria for the types of support and interventions available defined. An STI operational plan was developed to serve the changing transport needs of its DMCs and to provide resources to build up a portfolio of enhanced lending and technical assistance to support sustainable transport. The four areas chosen as its initial focus are (i) regional transport corridors, (ii) urban transport, (iii) mainstreaming climate change in transport, and (iv) road safety and social sustainability.

ADB continues to offer broader support to DMCs for road safety, and is one of the seven MDBs that signed a joint statement to combat the road safety problem in developing countries. Important steps taken include (i) a draft ADB Action Plan for Mainstreaming Road Safety in ADB Operations, for approval in 2011; (ii) a Memorandum with FIA Foundation for the Automobile and Society; and (iii) an International Road Assessment Programme for promotion of safe and sustainable transport in DMCs in Asia and the Pacific.

ADB is also working with cities across Asia to promote integrated urban transport and revitalize public transport services to ensure access and mobility while reducing emissions. To date, ADB has supported urban transport projects in Bangkok, Davao, Ha Noi, Ho Chi Minh, Kathmandu, Lanzhou, Tbilisi, Ulaanbaatar, Xian, and Yerevan.

ADB has organized two transport forums at its headquarters. The first ADB Transport Forum, "Asia on the Move: Energy Efficient and Inclusive Transport" (September 2008), was attended by more than 250 delegates from over 30 countries, and served as a platform for exchanging knowledge and experience for sustainable transport development. The second ADB Transport Forum, "Changing Course: Pathways to Sustainable Transport" (May 2010), was attended by over 300 delegates from around the globe, and provided a unique forum for discussing some of the most crucial issues facing transport in Asia. The second forum covered the four areas chosen as the initial focus of STI.

Box 3.02: Sustainable Transport Partnership Facility Windows

Partnership Window
- Financing contributions
- Expertise contributions

Innovation Window
- Policy advisory work
- Pre-feasibility/feasibility studies
- Finance add-on components to raise sustainability

B. Financing Resources and Partnerships

ADB is establishing a Sustainable Transport Partnership Facility (STPF) to create a mechanism for partners to provide financing and expertise to the STI and to catalyze innovative forms of support for sustainable transport within individual ADB operations. The STPF has two windows (Box 3.02). The partnership window allows for the contribution of financing and expertise to promote sustainable transport in the Asia and Pacific region. The innovation window identifies three areas where ADB will solicit grant financing from development partners for policy advisory work, pre-feasibility and feasibility studies, and financing "add-on" components to existing projects that enhance sustainability.

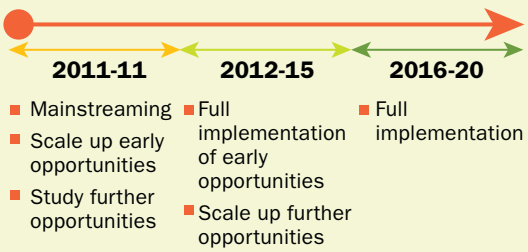
ADB is developing strategic partnerships with key agencies in the sector through joint programs and cooperation activities in STI priority areas. Partnerships in place include cooperation agreements with the Inter-American Development Bank, Korea Transport Institute, FIA Foundation for the Automobile Society, International Road Assessment

Programme, and the Institute for Transport Development and Policy. The Partnership on Sustainable Low Carbon Transport aims to improve knowledge sharing and help develop sustainable low carbon transport policies in DMCs.

Potential areas of cooperation include joint work programs and flagship studies on climate change and transport and financing road safety programs and components in lending projects. This financing can help support (i) programs and projects that shift traffic to lower emission modes (e.g., public transport, railways) and improve transport efficiency in existing modes through improved vehicle and fuel technologies; (ii) specific road safety actions such as helmet wearing and advocacy campaigns; and (iii) mainstreaming road safety in all ADB's transport loan and technical assistance projects.

ADB's technical assistance and capacity building programs provide the principal means to carry out identified activities. Some of these programs are the Sustainable Urban Transport, funded with $1 million from ADB's Technical Assistance Special Fund (TASF), the Development Framework for Sustainable Urban Transport funded with $500,000 from ADB's TASF, Implementation of Asian City Transport: Promoting Sustainable Transport in Asia Project, funded with $2.8 million from ADB's Climate Change Fund, and the Sustainable Fuel Partnership Study: Exploring an Innovative Market Scheme to Advance Sustainable Transport and Fuel Security, funded with $300,000 from the Government of Austria and $950,000 from ADB's TASF.

Figure 3.05: STI Implementation Time Frame



A pipeline of proposed TA projects will fund more activities.[58]

c. Planned Activities

Based on the implementation time frame in Figure 3.05, ADB will implement the STI operational plan to serve the changing transport needs of its DMCs. It will continue to provide resources to build up a portfolio of enhanced lending and technical assistance to support sustainable transport. ADB will also expand its support to DMCs for road safety in accordance with the ADB Action Plan for Mainstreaming Road Safety in ADB Operations.

The STI operational plan identifies three main categories of future ADB transport operations. First are operations to address continuing needs and challenges where ADB already has a track record of effective operations. Second are opportunities to introduce new or enhanced operations to support sustainable transport,

[58] These may include: Flagship Study on Transport Statistics and Outlook, expected to draw $1 million from ADB's TASF; Cluster TA to Operationalize STI: Subproject 1-Developing Pro-Poor Sustainable Non-motorized Transport—expected to draw $2 million from the Government of Japan's Japan Fund for Poverty Reduction, Subproject 2- GHG Assessment Methodologies in Sustainable Transport—expected to draw $1 million from the Global Environment Facility, Subproject 3-Intelligent Transport Systems—expected to draw $500,000 from e-Asia fund, and TA for Promoting Sustainable Low Carbon Transport in Asia and the Pacific—expected to draw $1.9 million from the Climate Change Fund.

focusing on four key areas: (i) urban transport, (ii) addressing climate change in transport, (iii) cross-border transport and logistics, and (iv) road safety and social sustainability. Third are potential elements of future sustainable transport over the medium term. These include conducting research, consultation, and pilot testing further aspects of sustainable transport, such as innovative financing mechanisms, public–private partnerships, road pricing, intelligent transport systems, and vehicle and fuel technologies.

3. Urban Program

Under Strategy 2020, ADB's proposed Urban Operational Plan (UOP)[59] will focus on improving the environment, economy, and equity in Asia's cities, the so-called 3E Agenda. The UOP will present an approach to realize the objectives of Strategy 2020: Promoting Livable Cities and Addressing the Urban Infrastructure Deficit. To reduce the carbon footprint of Asia's cities and to improve the quality of life of their residents, ADB will assist DMCs in addressing a range of social and environmental problems resulting from rapid urbanization. To address this challenge, ADB's Urban Program aims to invest $2 billion annually for urban infrastructure that will promote livable and sustainable cities, focusing on (i) environmental improvement, climate change mitigation, and adaptation projects; (ii) pro-poor urban renewal projects; and (iii) provision of infrastructure for inclusive economic growth. Working toward the achievement of the 3E agenda requires different structures for project preparation and finance if the priorities of Strategy 2020—taking ADB operations into new climate-related investment areas and partnerships with the private sector—are to be addressed.

[59] The Urban Operational Plan is currently being drafted.

a. Key Achievements

With the support of ADB and other financing partners, assistance was provided to urban operations groups for infrastructure development in Asian cities. Institutional sustainability, assistance to cities, and regional networking have been the three pillars of ADB's work, and there have been a number of key achievements in this area.

Perhaps most significant is the Cities Development Initiative for Asia (CDIA) established by ADB in 2007 as a joint international initiative of ADB, German Federal Ministry for Economic Development Cooperation (BMZ or Bundesministerium Für Wirtschaftliche Zusammenarbeit), Sweden International Development Agency (SIDA), Spain, and Nordic Development Fund, with mechanisms for additional shareholders. It works with cities, development partners, and the private sector to prepare needed investments for sustainable urban development, with projects such as public transport, solid waste methane capture, energy efficiency in buildings, and alternate energy sources. CDIA seeks to bridge the gap between strategic city development planning on the one hand, and urban policies, services, and infrastructure project preparation on the other, by assisting medium-sized cities with pre-project preparation and capacity building.

As of October 2010, CDIA had approved applications from 23 cities in 13 countries, working toward its target of directly working with 50 cities by end 2012. To date, these interventions have utilized $7.7 million of CDIA funding along with $1.6 million in counterpart contributions. These interventions are estimated to lead to about $4.4 billion in strategic urban infrastructure investments.

Other recent accomplishments include (i) the provision of assistance to cities to facilitate adoption of the 3Rs (reduce, reuse, recycle)

approach in developing infrastructure to improve the urban environment and living conditions of urban poor, and in fostering poverty alleviation measures; (ii) the development of guidelines or a checklist for the integration of knowledge management into ADB's core operational work under the peer review process, during which a total of 24 peer reviews were undertaken attended by project team leaders, peer reviewers, and members of the Urban Community of Practice; (iii) region-wide outreach established through links with other relevant institutions in the region, such as CityNet and the United Cities and Local Government Association; and (iv) preparation and dissemination of publications and papers covering topics such as new business lines in climate change, environmental infrastructure, solid waste management, urban transport, city cluster economic development, municipal finance, and urban renewal.

b. Financing Resources and Partnerships

The Urban Financing Partnership Facility (UFPF) provides the financing resources with a $14 million grant financing and a $70 million equivalent in guarantee financing from Sweden. Financing for CDIA come from a variety of sources, which include (i) the Project Development Support (Cities Development Initiative in Asia and Reduce, Reuse, and Recycle)[60]; (ii) Sustainability Gap Finance–The Urban Financing Partnership Facility—established with $84 million from the Government of Sweden; (iii) Regional Institutional Development Establishment of e-Systems in Support of Infrastructure Finance in Asia—funded with $2 million from external sources and the TASF; (iv) Community of Practice Support–Managing Sustainable Urban Development in Asia—funded with $800,000 from ADB; (v) Implementing the Urban Operational Plan: Financing Investments in Environmental Infrastructure—funded with $995,000 from the TASF; and (vi) from the Japan Fund for Poverty Reduction, which is expected to fund a cluster of technical assistance projects on Environmental Sustainable Cities.

ADB partners include (i) the Urban Financing Partnership Facility: Sweden (SIDA); (ii) Cities Development Initiative for Asia: Government of Spain, Germany (GTZ), Sweden (SIDA), Austria and Nordic Development Fund; (iii) e-Systems in Support of Infrastructure Finance in Asia: Republic of Korea and Knowledge Partnership; (iv) Japan, through its Japan Special Fund, supporting the technical assistance on Project Preparation Support for Livable Cities in Asia; and (v) the Singapore Centre for Livable Cities and Civil Service College, as knowledge and capacity development partners.

c. Planned Activities

ADB will continue to support CDIA operations over the next 2–3 years. It is envisioned that the total number of approved city applications will increase from 18 to 50, with at least 12 approved applications per year. CDIA anticipates that 80% of all pre-feasibility studies supported by CDIA will be taken further by financing institutions. CDIA will develop more capacity development activities, partnerships, and networks with national and regional groups across a range of stakeholders and shareholders agencies. By the fourth quarter of 2011, it is envisioned that at least two regional networks will have been established, and that these groups will use the CDIA training tools in their capacity building programs by 2012. CDIA will continue its discussions with the Government of the Philippines to confer it with privileges and immunities similar to that enjoyed by the International Rice Research Institute and ADB.

[60] These cover: Managing the Cities in Asia—funded with $980,000 from ADB and $10.98 million from other funding sources; Support for the Cities Development Initiative for Asia—funded with $2 million from external sources; and Support for Livable Cities in Asia—funded with $2 million from external sources.

ADB will formally discuss this issue with the government.

The development and consultation process associated with the Urban Operations Plan (UOP) will culminate in an Urban Forum late in 2011. This process will enable ADB to disseminate the benefits of its activities, bolstering economic competitiveness, environmental sustainability, and pro-poor urban development in its DMCs, and providing an opportunity to mobilize support from development partners. The preparation of pilot activities for the UOP has commenced, with appropriate projects being identified by CDIA and the operations departments. More resources will be required to develop these projects, particularly public–private partnership (PPP) projects in 2011 and 2012. A cluster of technical assistance projects will be processed to fund these activities.

The Urban Financing Partnership Facility (UFPF), which focuses on financing the sustainability gap—the gap between the cost of a business-as-usual investment and a climate-friendly investment—and providing guarantees for such projects, will disburse its grant funds and commence guarantee activities. More funding will be sought as the facility's sustainability gap financing window is fully committed to pilot projects for new approaches in providing environmental infrastructure.

4. Climate Change Adaptation Program

Among all regions of the world, Asia and the Pacific has the greatest number of people at risk from climate change impacts. The poorest and the most vulnerable communities are likely to suffer the most due to limited adaptive capacity. Climate change will have adverse impacts on water, food, fuel, health, education, and access to social services. Climate change impacts on food security, water security, habitats, and livelihoods may force many Asians to migrate. Many small island states may see their very existence under threat from climate-induced sea level rise. Hard-won gains in poverty reduction and progress toward achieving the Millennium Development Goal (MDG) targets are threatened by the adverse consequences of climate change.

To help DMCs address these challenges, ADB is ramping up its support of country-led climate change adaptation programs, enhancing their resilience to the adverse impacts of climate change by (i) mobilizing concessional and innovative financing to address the additional costs of adaptation, (ii) capturing and disseminating adaptation knowledge, and (iii) fostering networks and partnerships.

The 2010 climate change strategy presented in *Addressing Climate Change in Asia and the Pacific: Priorities for Action* emphasizes: (i) the integration of adaptation and disaster risk reduction into national development plans; (ii) climate resilience building of vulnerable sectors, including agriculture, energy, water, transport, and health; (iii) climate proofing of projects; and (iv) prioritizing the adaptation needs of the most vulnerable, including women. The strategy also focuses on interventions at national, sectoral, and project levels, and targets vulnerable sectors and communities to increase climate resilience.

ADB is expanding and strengthening partnerships with governments, international institutions, bilateral agencies, NGOs, and other development partners in the areas of climate science, adaptation practice, adaptation finance, and capacity development to broaden the impacts of ADB-supported adaptation activities.

a. Key Achievements

ADB continued to enhance its efforts to support country-driven climate change adaptation programs. In 2010, ADB approved

Box 3.03: Integrating Climate Change Adaptation in Cambodia's Roads

In 2010, ADB approved the Rural Roads Improvement Project in Cambodia worth $67 million to rehabilitate and pave 505.4 km of rural roads to improve rural connectivity to national and provincial road networks. The project was designed with a significant adaptation component amounting to $5.5 million, to be financed by the Nordic Development Fund.

Climate change adaptation interventions include (i) engineering adjustments, such as increasing drainage capacity and adjusting subgrade materials to withstand higher water content and road elevation in areas particularly at risk to flooding; (ii) capacity building and information generation, such as preparing climate change vulnerability maps to influence transport sector planning; and (iii) introducing ecosystem-based adaptation strategies focusing on environmental and green planning for project roads to improve flood and drought management, such as increasing ground cover and infiltration of flood water during floods and water retention during droughts, which also enhance rural livelihoods by improving the soil structure for agriculture. The project will also establish programs for the Ministry of Rural Development for capacity building in effective road maintenance and management, disaster mitigation, and over-loading control, and will develop a program for building capacity of local private sector contractors in undertaking rural road maintenance work.

a total of 20 loan projects, along with 36 TA and grant projects, related to climate change adaptation or with climate change adaptation components. These represent a 100% increase in number of loan projects and a 30% increase in number of TA and grant projects related to or with adaptation components, compared with 2009 levels (Box 3.03).

In 2010, ADB made significant progress in implementing its adaptation agenda. Preparation of adaptation tools and methods were initiated and pilot tested to assess the vulnerability of projects to climate change impacts, and to climate-proof vulnerable projects. The tools and methods include (i) a project screening checklist for project preparation, which provides rapid all-hazards risk assessment; (ii) adaptation sector briefs; and (iii) technical notes on "how to do climate proofing" for transport and agriculture to assess climate risks, evaluate impacts and adaptation costs, and prioritize responses.

ADB is also expanding its series of regional studies of the economics of climate change. The Southeast Asia study was completed in 2009; studies of the Pacific DMCs, South Asia, and East Asia are under way; and the study of Central and West Asia was submitted for funding. Groundbreaking climate impact and vulnerability assessments were completed in the urban and energy sectors in 2010. A study of climate change impacts on Ho Chi Minh City until 2050 examined structural and nonstructural options for building climate resilience.

b. Financing Resources and Partnerships

ADB has supported a wide range of adaptation activities by grant financing, both from internal resources and from a growing number of multilateral and bilateral funds. ADB implemented a wide range of adaptation activities under RETA 6420: Promoting Climate Change Adaptation in Asia and the Pacific, which included the implementation of seven small projects to pilot test approaches and develop practical tools for adaptation, and to improve national capacity to mainstream adaptation in project planning. Another TA[61] was approved in July 2010 to further provide modest funding for the integration of climate resilience into national and sector planning processes. Vulnerability assessments and adaptation strategies for selected sectors and river basins will also be implemented.

[61] ADB. *Project Information Document. 44158: Enabling Climate Change Responses in Asia and the Pacific*. http://www.adb.org/projects/project.asp?id=44158 (accessed 23 February 2011).

The first round of adaptation funding under the ADB's Climate Change Fund (CCF), amounting to $10 million, has been allocated to 11 projects. In November 2010, ADB committed an additional $4 million under the CCF, and a number of projects are in the pipeline.

For Bangladesh and Tajikistan, ADB and partners have developed strategic programs for climate resilience, funded through the Pilot Program for Climate Resilience (PPCR) of the Climate Investment Funds. PPCR provides incentives for scaled-up action and transformational change in integrating climate resilience in national development planning consistent with poverty reduction and sustainable development goals. Similar programs are being prepared for Cambodia, Nepal, and the Pacific.[62]

ADB, as an executing agency of the GEF, helps countries access GEF-adaptation funding windows—the Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF)—to implement activities to increase resilience to climate change at national, sector, project, and community levels. ADB has a pipeline of SCCF and LDCF proposals, which includes the Climate Resilient Infrastructure Development in the Northern Mountain Provinces of Viet Nam and the Climate Resilient Coastal Protection and Management in India.

In June 2010, ADB was accredited by the Adaptation Fund (AF) Board as one of the fund's multilateral implementing entities, and is currently soliciting proposals for funding under AF.[63]

ADB is working closely with governments, international institutions, bilateral agencies, NGOs, and other development partners to improve knowledge and understanding of the impacts of climate change and options for effective adaptation responses. For instance, collaboration continues with UNEP, the Institute for Global Environment Strategies (IGES), and other partners to implement

Box 3.04: Asia Pacific Adaptation Network (APAN): Sharing Knowledge on Adaptation Actions

Adaptation to climate change is knowledge-intensive, and access to relevant and usable knowledge is an important prerequisite for successful adaptation efforts. The APAN is a regional knowledge sharing and capacity building mechanism launched in October 2009 during the United Nations Framework Convention on Climate Change (UNFCCC) Bangkok Talks as a part of the Global Adaptation Network.

The APAN is facilitated by ADB together with UNEP, the Institute for Global Environmental Strategies (IGES), AIT-UNEP Regional Resource Center for Asia and the Pacific (RRC.AP) and other partners. It aims to build the climate resilience of vulnerable human systems, ecosystems, and economies through the mobilization of knowledge and technologies to support adaptation capacity building, policy setting, planning, and best practices.

APAN activities are undertaken by its regional hub, subregional nodes, and partner institutions in the Asia and Pacific region. ADB, through RETA 7535: Strengthening the Asia Pacific Adaptation Network, is supporting the implementation of APAN activities, particularly those that are related to the enhancement of the web portal (www.asiapacificadapt.net) and the facilitation of knowledge exchange among governments, development partners, and other stakeholders. ADB is providing support to enrich the knowledge base of the web portal by sharing its own knowledge and experiences in the implementation of adaptation projects.

Through APAN and the Regional Climate Change Adaptation Knowledge Platform for Asia, ADB helped organize the first Asia-Pacific Adaptation Forum on 21–22 October 2010 in Bangkok. The forum attracted more than 550 participants, and provided a venue for sharing knowledge and experiences on mainstreaming adaptation into development planning in the region. The second forum is scheduled for late October 2011 in Bangkok.

[62] http://www.climateinvestmentfunds.org/cif/ppcr
[63] http://adaptation-fund.org/

the activities of the Asia Pacific Adaptation Network (APAN) (Box 3.04), which ADB supports through technical assistance.

c. Planned Activities

To promote its climate change adaptation program, ADB is set to undertake a number of activities. It will finalize the Climate Resilience Initiative to (i) define ADB's priorities with respect to climate change adaptation, (ii) upscale adaptation support, and (iii) provide guidance to operational departments in identifying, designing, and implementing adaptation programs and projects.

ADB will continue to implement RETA 7608: Building Resilience to Disaster and Climate Change to promote the integration of climate resilience into national and sector planning processes and to strengthen the capacities of both ADB and its DMCs to build climate resilience; and RETA 7581: Supporting Investments in Water and Climate Change, to support the development of climate projections, impact assessments, and adaptation strategies for selected Asian river basins.

ADB will commit and utilize the additional $4 million in replenished CCF grant financing to integrate adaptation objectives into ADB projects, while enhancing their climate resilience. It will provide assistance to Cambodia, Nepal, and the Pacific region in developing their Strategic Programs for Climate Resilience (SPCRs), and support the development and implementation of investment projects identified in the SPCRs. It will also assist its regional departments and DMCs to access adaptation funding sources, including the Kyoto Protocol Adaptation Fund, GEF, and other multilateral and bilateral sources to improve capacity, increase the effectiveness of adaptation responses, and build climate resilience.

5. Managing Land Use and Forests for Carbon Sequestration

Land use change, mainly from tropical deforestation, generates between 15% and 20% of GHG emissions, and is the dominant source of emissions in several countries of Asia and the Pacific. A recent ADB study, for example, found that approximately 75% of the emissions in Southeast Asia are derived from forest loss and other land use change, mostly from deforestation in Indonesia. The same study notes that Southeast Asia holds 40% of the global potential for reducing GHGs from forest loss and other land use changes.[64]

Given the significant roles that forest and land use management play in local and global responses to climate change, Strategy 2020 calls for ADB to become more involved in promoting sustainable forest management, especially to help DMCs access opportunities for mitigation financing. Such opportunities come from the likely inclusion of the Reduced Emissions from Deforestation and Forest Degradation (REDD) approach in the post-2012 global climate regime. While afforestation and reforestation have generated emission reduction credits under the Kyoto Protocol's Clean Development Mechanism, only a few projects have been approved from the first commitment period to 2012.

The REDD approach envisions combining performance-based payments by developed to developing countries and a new forest carbon market that creates incentives for "avoiding" deforestation that would otherwise have occurred if land use change trends in a given country had continued. In addition, new afforestation and reforestation rules for enhancing forest carbon stocks are being considered in conjunction with REDD, along with measures to promote sustainable

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

forest management, support forest-based communities, and conserve biodiversity (collectively referred to as REDD-plus). These arrangements are under negotiation through the UNFCCC, and are incorporated into appropriations and pending legislation in Australia, the United States, and other countries. They have the potential to generate tens of billions of dollars in new financing for rural development and forest conservation in tropical forested countries. In Asia and the Pacific, Indonesia, the Mekong Basin, Papua New Guinea, Solomon Islands, and Vanuatu are poised to be significant participants in these actions and are among their largest beneficiaries.

a. Key Achievements

Using resources from a grant window of ADB's CCF, GEF, and ADB TA, several activities are being supported to develop new REDD and REDD-plus approaches to mitigating GHG emissions, while conserving biodiversity and supporting the livelihoods of forest-based communities. The first five pilot activities to receive ADB support include two regional cooperation initiatives and three investment projects with REDD-plus dimensions built into them. These are the (i) Greater Mekong Subregion (GMS): Reducing Emissions from Deforestation and Forest Degradation in the GMS Biodiversity Conservation Corridors Initiative; (ii) Heart of Borneo Initiative (Indonesia: Sustainable Forest and Biodiversity Management); (iii) Philippines: Mainstreaming REDD in the Integrated Natural Resources and Environmental Management Sector Project; (iv) PRC: Jiangxi Sustainable Forest Ecosystem Development Project; and (v) the PRC: Silk Road Ecosystem Restoration Project.

Further, a RETA[65] began in July 2009 to (i) support knowledge exchange across ADB pilot activities, (ii) develop partnerships with others working in this field, and (iii) document lessons from the pilots that can inform future policy and program development in ADB and cooperating DMCs. Taken together, these actions represent a targeted reengagement of ADB in the forest and land use management sector, with direct grant support amounting to approximately $8 million, associated with grant and loan projects of more than $200 million.

The same RETA project provides knowledge management functions for these efforts to demonstrate how markets can be created to facilitate payment for the provision of ecological services, especially the global GHG reduction benefits forests provide by sequestering carbon. ADB is developing its knowledge of this subject.

b. Financing Resources

To support REDD and REDD-plus approaches to mitigate GHG emissions, financing support comes from a grant window of $5 million which is included in ADB's CCF, the GEF as grant cofinancing, and ADB TA.

REDD will not only be a climate solution, but will also be a major new source of rural development funds. As part of the global solution to rising atmospheric GHG concentrations, developed countries will continue to support mitigation measures in developing countries as a cost-effective means toward a global end and to help developing countries shift their economies to lower-carbon paths. REDD is the newest such approach, including both direct performance-based financing of actions, and possibly, the creation of a new forest carbon market.

The REDD incentive system has the potential to make forests more valuable when left intact rather than cut, with a range of co-benefits generated in the process. Tropical forests not only capture carbon from the atmosphere, but

[65] ADB. 2005. *Technical Assistance for Capturing Economic Benefits from Ecosystem Services*. Manila.

serve as regulators of watersheds, storehouses of biodiversity, and income sources for dependent communities. These values have scarcely been captured by the marketplace, so REDD and REDD-plus schemes are meant to create markets to compensate for the provision of global and local ecological services—with poor rural communities sharing in the benefits.

c. Planned Activities

Many challenges are associated with the establishment of a credible system for organizing REDD actions, such as determining reference baselines of past trends and forest carbon stocks, channeling financing to appropriate actions, ensuring a fair distribution of the benefits, and monitoring results. However, after due consideration, the REDD approach has emerged as the best—and some would argue, the last—hope for arresting the high rate of deforestation in the tropics and associated GHG emissions, while channeling funds to activities that will support rural development and the conservation of precious biological resources.

Demand from DMCs for assistance in this effort is high, and ADB is gearing up to respond with a range of public and private organizations that will bring the requisite knowledge and cofinancing to make REDD-plus a success in Asia and the Pacific, as an important part of the global response to the climate change challenge, as well as a new source of financing to reduce poverty.

6. The Poverty and Environment Program (PEP)

The PEP aims to improve the environmental sustainability of development processes in ADB's DMCs through enhanced mainstreaming of environmental objectives in ADB operations and business processes. To implement the program, two RETA projects—TA6150–REG: Poverty and Environment Program (PEP) and TA 6422–REG: Mainstreaming Environment for Poverty Reduction (MEPR)—were approved.

The PEP RETA, implemented from 2004 to 2008[66], was designed to accelerate learning on poverty-environment linkages by promoting targeted interventions that contribute to poverty reduction and environmental improvement and systematically capturing and disseminating knowledge on poverty-environment relationships. PEP promoted targeted interventions in the form of pilot tests, analytical studies, and the capture and dissemination of information on poverty-environment relationships. It focused on three areas: (i) environmentally sustainable livelihoods, (ii) pollution and health, and (iii) environmental vulnerability.

MEPR, implemented from 2007 to 2012, has a much broader mandate to mainstream environmental considerations into ADB business practices and DMC development strategies, programs, and projects. In addition to continuing the activities under PEP, the RETA is strengthening the capacity of selected resident missions to integrate environment objectives into ADB and DMC activities. MEPR has four main outputs: (i) increased environment capacity in resident missions to promote environment mainstreaming; (ii) implementation of subprojects; (iii) capture and dissemination of knowledge on poverty-environment linkages; and (iv) management and administration of the technical assistance.

a. Key Achievements

Poverty and Environment Program (RETA 6150). A total of 15 subprojects were implemented under the first phase of PEP. These subprojects focused on three key areas:

[66] This refers to the physical completion of the RETA. The RETA was financially closed in March 2010.

(i) protection, conservation, and sustainable use of natural resources and ecosystem services to sustain the poor's livelihood; (ii) reduction of air and water pollution and wastes that adversely affect the poor's health and productivity; and (iii) decreasing vulnerability of the poor to natural hazards and disaster prevention. Twelve of the subprojects implemented were pilot interventions, two are analytical studies, and one is information dissemination.

Experience and lessons learned from carrying out the subprojects were compiled and synthesized in a publication titled *Nature and Nurture: Poverty and Environment for Asia and the Pacific*. The publication also examined how knowledge is feeding into ADB's ongoing projects and programs. To illustrate the challenges and success stories in addressing poverty and environment issues at the local level, video documentary films on selected subprojects were also produced under the first phase of PEP. In addition, one of the analytical studies was a book titled *Poverty, Health and Ecosystems: Experience from Asia,* which was co-published with the International Union for the Conservation of Nature (IUCN). It features 16 case studies in Asia documenting relationships between poverty, health, and natural resources management.

To better coordinate work on poverty reduction and the environment within 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 established a poverty environment website (www.povertyenvironment.net) in a neutral domain to pool and present poverty–environment efforts globally. The website collects and shares knowledge and experience on poverty–environment links and good practices in responding to poverty–environment challenges, and fosters exchange and collaboration among poverty–environment stakeholders from Asia and other parts of the world (Box 3.05). The website also covers Poverty Environment Partnership meetings, providing registration information and background papers, posting updates, and uploading session materials and presentations from the meetings.

Box 3.05: Poverty and Environment Net Website

ADB hosted the 13th Poverty Environment Partnership Meeting in June 2008, which provided the opportunity to discuss and disseminate the lessons learned from implementation of PEP subprojects, and explored the emerging thinking with respect to low-carbon growth and climate change adaptation in Asia and around the world, along with new developments concerning environment and development financing, food crisis, and biofuels and poverty.

Mainstreaming Environment for Poverty Reduction. A distinctive feature of MEPR in comparison to PEP is the addition of a country-level mainstreaming component through the recruitment of environment specialists in six resident missions (Bangladesh, Lao PDR, Mongolia, Pakistan, the PRC, and Viet Nam) to help promote environmental mainstreaming

in ADB operations, business processes, and programming.

The environment specialists provided upstream support in environmental mainstreaming, including providing assistance in implementing, monitoring, and evaluating various loan and TA projects in their respective countries. They also worked to strengthen the capacity of local environmental agencies (both government and non-government) to mainstream effective environmental management practices within national strategies and operations.

MEPR also provided assistance in the preparation of various country programs and reports, including Country Partnership Strategies (CPS). Of the five CPS in development in late 2010, MEPR supported three of them. In Bangladesh, the Environment Specialist prepared a draft of the Bangladesh CEA 2010 and executive summary, and drafted a section on Environment and Climate Change for the Bangladesh CPS. In Mongolia, the Environment Specialist updated the environment indicators for the Mongolia CPS, providing relevant comments regarding the updates. In the Philippines, financial support was given to the Philippines's CPS process through a joint ADB-World Bank country environmental assessment entitled "The Philippines Environment and Natural Resources Country Assessment: A Call to Action." The synthesis assessment was finalized in March 2011. It presents recommended policy, institutional and investment responses and an action plan for consideration by government focusing on natural resources, environmental health and climate change.

Another output of MEPR is implementing subprojects (pilot interventions and targeted analytical studies) that improve the environment and contribute to poverty reduction. Subprojects are focused on three prioritized areas: (i) protection, conservation, and sustainable use of natural resources and ecosystem services to maintain the livelihoods of the poor; (ii) reduction of air and water pollution and waste that directly impact the health and productivity of the poor; and (iii) reduction of vulnerability to natural hazards and disaster prevention.

Nine subprojects have already been approved and eight more proposals were in the pipeline as of April 2011. Out of the 17 total subproject proposals, 8 are pilot interventions and 9 are targeted analytical studies. These studies will help contribute to the knowledge component of MEPR by helping to collect and spread knowledge on poverty-environment relationships.

MEPR continues to maintain the Poverty Environment Net website, which has become the primary knowledge repository of poverty-environment documents, not only in Asia but globally. PE Net's significant contribution to the spread of poverty and environment knowledge is evidenced by its top ranking in several Internet search engines as well as the number of average monthly visits to the site, which reached 26,000 in 2010. The site extensively covered the 15th and 16th Poverty Environment Partnership Meetings in Malawi and Vienna held in March 2010 and February 2011.

A notable feature of MEPR is the role of ADBs' Environment Committee in its management. This Committee, composed of 14 members who represent each of ADB's operational departments, serves as the Steering Committee of the RETA (along with other responsibilities). This helps ensure that the objectives and activities of the RETA are communicated and coordinated throughout ADB. The Environment Committee also helps the RETA stay attuned to other knowledge generation and management activities coordinated by the Environment Committee.

b. Financing Resources and Partnerships

The Poverty and Environment Fund (PEF) is a multi-donor funding mechanism that provides financing resources for the PEP and MEPR. The total contribution committed to PEF is about $8.6 million—$5 million from the Government of Norway and $3.6 million from the Government of Sweden. PEP had an allocation of $3.42 million and additional $500,000 from ADB. MEPR has a total fund allocation of $5.45 million. This amount came from an additional contribution of $2.4 million from Norway, along with interest income, income from investments, and unutilized funds from the first RETA. Subsequently, Sweden provided an additional allocation of $2.6 million.

c. Planned Activities

The environment specialists will continue to play a key role in ADB's proactive environment agenda by being actively involved in: (i) providing support for loan and TA projects, including helping undertake environmental safeguards; (ii) continuing to provide upstream environmental support to national and sectoral planning agencies; and (iii) facilitating ADB capacity building assistance and initiatives.

MEPR will also step up efforts to promote the integration of environmental considerations, including climate change responses, into CPS, Country Operations Business Plans, and regional cooperation strategies. In 2011 and 2012, the CPS will be updated in some 20 DMCs,[67] which will offer a significant opportunity for MEPR to provide upstream inputs to positively influence environmental mainstreaming. MEPR will offer as much as $20,000 to help DMCs conduct an environmental thematic study as part of CPS preparation. This may take the form of a Country Environment Note, envisioned as a succinct analytical document prepared as part of the CPS process that will reflect ADB's priorities and promote logical integration of environmental interventions into the CPS program.

MEPR will also aim to approve the remaining proposals in the subproject pipeline by mid-2011 and successfully implement a range of subprojects—both pilot interventions and analytical studies—that will improve the environment while contributing to poverty reduction. These may take the form of innovative measures that might otherwise not be explored by ADB, including (i) testing models for REDD-plus, (ii) developing poverty-environment mapping tools to support local decision-making, (iii) calculating carbon benefits from improved land and water resources management, and (iv) applying ecosystem services payments to ADB projects.

As for the knowledge component of the program, MEPR plans to produce a publication synthesizing the experiences and lessons learned in carrying out the subprojects. To further the exchange of knowledge, a regional workshop will also be held in 2012. As a valuable resource of poverty and environment knowledge, the PE Net website will be maintained beyond the life of the PEP. A sustainable means of maintaining and managing the site will be implemented towards the end of the program.

ADB will continue to provide technical and administrative support to the regional departments and resident missions to facilitate subproject selection, approval and implementation, and country-level environment capacity building. Monitoring and evaluation of the progress of subproject activities to ensure that objectives are being met will be undertaken.

[67] **2011:** Azerbaijan, Bhutan, Indonesia, Kazakhstan, Krygz Republic, Lao PDR, Micronesia, the PRC, Solomon Islands, Sri Lanka, Timor-Leste, , ,Uzbekistan, Viet Nam ; **2012:** Cook Islands, Nauru, Nepal, Samoa, Thailand, Tonga, Tuvalu. .

7. Water Financing Program

The provision of freshwater of sufficient quality and quantity is a vital and basic ecosystem service. Proper management of, and investment in, water resources is essential to address water scarcity, the overabundance of water (flood risk), and water quality. Under a business as usual scenario, there is a projected large and unsustainable gap between global supply and water withdrawals, which can only be addressed by investments in infrastructure and water policy reform.[68] In Asia and the Pacific, ADB estimates that an investment of at least $8 billion annually is needed to meet the MDG targets for safe drinking water and sanitation. This does not include the investments also needed for irrigation services, river basin management, wastewater management, flood management, and climate change adaptation.

In response to this challenge, the ADB's Water Financing Program calls for stronger country-focused investments and increased technical assistance to advance reforms and support capacity development. Program implementation is supported by the Water Financing Partnership Facility, with grant contributions from financing partners such as Australia, Austria, the Netherlands, Norway, and Spain.

Box 3.06: Three Investment Areas in ADB's Water Operations

- **Rural water** to improve health and livelihood in rural communities through access to safe drinking water, improved sanitation, and more efficient irrigation and drainage services
- **Urban water** to spur economic growth in cities through access to safe drinking water and improved sanitation and wastewater management
- **Basin water** to promote healthy rivers through integrated water resources management

Launched in March 2006, the Water Financing Program seeks to expand ADB's investments in the water sector and achieve the following targeted outcomes: (i) 200 million people with access to safe drinking water supply and improved sanitation; (ii) 100 million people at reduced risk from floods; (iii) 40 million people with access to more efficient and productive irrigation and drainage services; and (iv) integrated water resources management introduced in 25 river basins.

Table 3.01: Approved Water-Related Projects

	Approved Investments (including MFF) in $ billion					
Investment Areas	**2006**	**2007**	**2008**	**2009**	**2010**	**Total**
Water supply, sanitation, and wastewater management	1.09	0.86	1.14	1.62	1.85	6.56
Irrigation and drainage	1.01	0.05	0.39	0.06	0.07	1.57
Flood management	0.20	0.12	0.01	0.00	0.37	0.71
Water resources management, wetlands, and watershed protection	0.00	0.00	0.68	0.15	0.03	0.86
Hydropower generation	0.44		1.04	0.26	0.00	1.74
TOTAL	**2.74**	**1.03**	**3.26**	**2.09**	**2.32**	**11.44**

MFF = multitranche financing facility.

[68] UNEP. 2011. *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication – A Synthesis for Policy Makers*. www.unep.org/greeneconomy

Table 3.02: Expected Beneficiaries of Approved Projects

Targeted Outcomes	Target	Expected beneficiaries of 2006–2010 approved projects	% of target
Safe drinking water and improved sanitation	200 million	162 million	81
Reduced risks from flood	100 million	43 million	43
More productive and efficient irrigation and drainage services	40 million	18 million	45
Integrated water resources management introduced in river basins	25 river basins	25 rivers basins	100

The program represents ADB's commitment to boost developments in rural, urban, and basin water, with increased investment levels, accelerated policy and institutional reforms, strengthened institutional capacity, and expanded knowledge base as target outputs (Box 3.06). Phase 1 of the program was implemented in 2006–2010.

a. Key Achievements

The total value of approved investments from January 2006 to December 2010, including projects financed through multi-tranche financing facilities, totaled $11.44 billion. The $11.44 billion approved water-related investment projects from January 2006 to December 2010 are expected to benefit a total of 223 million people (Tables 3.01 and 3.02).

b. Financing Resources and Partnerships

The Water Financing Partnership Facility provides additional financial resources to support the implementation of the Water Financing Program, such as through project support for in-country work on project preparation and implementation, and program quality support for facilitating reforms and strengthening capacity and ensuring quality, synergy, and innovation.

Out of the initial target of $100 million, a total of $48.11 million confirmed contributions have been realized as of 31 December 2010 to March 2011 under the Netherlands Trust Fund ($19.75 million) and the Multi-donor Trust Fund ($28.36 million), with contributions from Australia, Austria, Norway, and Spain. As of end December 2010, a total of $35.07

Table 3.03: Leveraged Water-related Investments

Investment Areas	2006–2010 Total Approved ADB Investment Projects ($ billion)	2006–2010 Approved ADB Investment Projects with WFPF Funding ($ million)
Water supply, sanitation, and wastewater management	6.56	2.21
Irrigation and drainage	1.57	0.26
Flood management	0.71	0.32
Water resources management, wetlands, and watershed protection	0.86	0.63
Hydropower generation	1.74	0.00
TOTAL	**11.44**	**3.42**

Table 3.04: Leveraged Water-Related Project Beneficiaries

Measurement	Water Financing Program Target ($million)	Expected No. of Beneficiaries of 2006–2010 Total ADB Approved Water Projects ($million)	Benefits leveraged from WFPF-Supported 2006–2010 Approved Projects ($million)
Number of people with access to safe drinking water and improved sanitation	200	162	24
Number of people with improved and efficient irrigation and drainage services	40	18	3
Number of people with reduced risk to floods	100	43	13
TOTAL	**340**	**223**	**40**

million had been allocated to 102 projects and activities.

The figures below (Table 3.03 and Table 3.04) summarize the facility's results to date in terms of investment projects and expected beneficiaries, leveraged from projects approved as of the end December 2010, and how they are contributing to the Water Financing Program targets.

c. Planned Activities

The Water Financing Program will continue during 2011–2020, guided by the priorities set out in the Water Operational Framework (2011–2020), which include (i) improved water use efficiencies; (ii) expanded wastewater management and reuse, including hygiene sanitation; (iii) integrated water resources management; (iv) expanded knowledge development; and (v) enhanced partnerships with the private sector. This will sustain ADB's expanded water investments at $2 billion–$2.5 billion annually, or a total of $20 billion–$25 billion by 2020, focusing on the priorities set out in the Water Operational Framework.

An expanded Water Financing Partnership Facility is also being formulated to meet the requirements of the program. Apart from cash contributions, other modalities such as knowledge partnerships and expert exchange or secondment will be further explored.

8. Energy for All Initiative

Modern forms of energy are engines for economic growth and human development, yet millions in the Asia and Pacific region are energy poor. This is a major development challenge and a barrier to the achievement of the MDGs. In response to this challenge, ADB established the Energy for All Initiative to empower the region's poor through increased access to energy.

a. Key Achievements

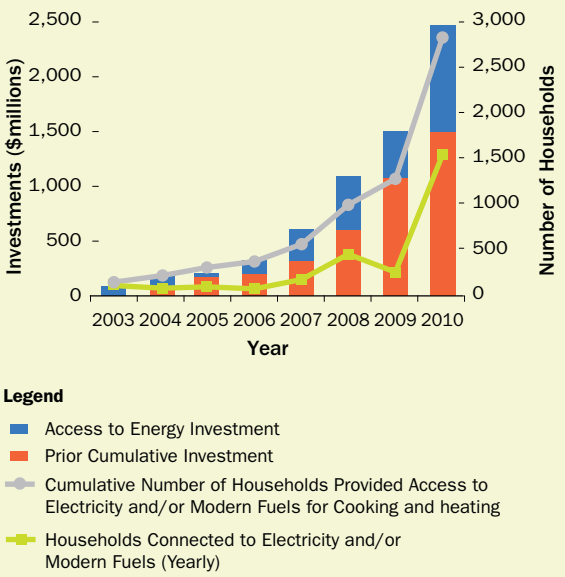
The Energy for All Initiative has developed new approaches and methodologies for scaling up access to energy for the poor. Since 2003, cumulative ADB investment in energy access has reached over $2.45 billion and has provided access to electricity or modern fuels to over 2.8 million households in the region. Prior to the Initiative's launch, ADB's annual average investment in energy access was $120 million. Since the initiative's launch in 2008, this average investment has increased to over

$617 million annually. The most successful year so far, 2010, has seen $955 million in energy investments. The projects supported by this level of investment will connect more than 1.5 million households to electricity and to modern fuels.

Another achievement was the launching of the Energy for All Partnership in June 2009. This ADB-led regional partnership brings together key stakeholders from the private sector, financial institutions, governments, and nongovernment organizations to scale up access to energy through knowledge management, capacity building, and project development. The partnership has a target of providing 100 million people in the region with access to modern energy by 2015.

Lighting for All, a platform under the Energy for All Partnership, was launched by ADB in October 2010. It will seek to bring in all players in the supply chain and provide 50 million people with modern lighting by 2015. From 2003 to third quarter of 2010, ADB invested close to $50 million annually in off-grid electricity and lighting and $140 million annually in on-grid connected electricity and lighting. ADB has projected investments of $250 million in the next 5 years in lighting alone.

Fig. 3.06: ADB Investment in Access to Energy and Household Connections (2003–2010)



Improved knowledge management was carried out through (i) workshops and seminars on scaling up access to energy, including sessions during successive Asia Clean Energy Forums

Table 3.05: Access to Energy Project Statistics (2003–2010)

Year	Yearly Investment in Access to Energy ($ million)	New Households Connected to Electricity	New Households Connected to Modern Fuels for Cooking and/or Heating	Yearly Total New Households Provided Energy Access
2003	87.75	146,237.97	0.00	146,237.97
2004	86.02	0.00	73,518.53	73,518.53
2005	23.50	90,500.00	0.00	90,500.00
2006	110.80	61,143.20	10,305.63	71,448.83
2007	287.05	179,430.31	0.00	179,430.31
2008	476.36	456,807.20	0.00	456,807.20
2009	420.58	223,379.15	34,467.59	257,807.20
2010	955.15	742,314.45	812,152.21	1,554,466.66
TOTAL	**2,447.20**	**1,899,812.29**	**930,443.97**	**2,830,256.25**

in 2008 and 2009 and an entire track of discussion devoted to energy access at the 2010 Forum; and (ii) *Powering the Poor*, a publication of case studies of ADB projects that delivered access to modern energy to poor communities.

Through ADB approved projects, air pollutants including CO_2 emissions were reduced through the replacement of kerosene and firewood with electricity and cleaner fuels. ADB's Energy Policy of 2009 includes a provision to maximize access to energy for all as one of three pillars to help DMCs provide reliable, adequate, and affordable energy for inclusive growth in a socially, economically, and environmentally sustainable way. To ascertain progress, ADB investments to provide access to energy are being tracked (Figure 3.06 and Table 3.05).

b. Financing Resources and Partnerships

The efforts of the Energy for All Initiative were funded through two TA projects and financing partnerships. The Energy for All Initiative was funded with $1.8 million from the Government of the Netherlands and supplementary TA of $500,000 from ADB's fund. Empowering the Poor through Increasing Access to Energy was funded with $2 million from the Government of Japan's Asian Clean Energy Fund, under the Clean Energy Financing Partnership Facility, and an additional $150,000 from the Government of Denmark.

ADB's partners in the initiative include the Government of the Netherlands, the Government of Japan, the Government of Denmark, and members of the Energy for All Partnership—The Energy and Resources Institute (TERI), SNV Netherlands Development Organization, Sustainable Energy Associations of Singapore, World LPG Association, World Business Council for Sustainable Development, e8, Renewable Energy and Energy Efficiency Partnership, National Electrification Administration of the Philippines, E+Co, and others.

c. Planned Activities

ADB will continue building on the success of the Energy for All Initiative by moving beyond business-as-usual practices and promoting new approaches for scaling up access to clean, modern energy among the poor, through the TA on Empowering the Poor through Increasing Access to Energy.

ADB will support project identification and development in high impact priority DMCs, including Bangladesh, Bhutan, Cambodia, Indonesia, Lao PDR, Nepal, Pakistan, and the Philippines. The approaches promoted will include off-grid renewable energy technologies for lighting and electricity generation, such as solar photovoltaic (PV), micro-hydro, and small-scale wind, as well as cleaner, more efficient cooking and heating applications, such as improved cook stoves and biogas from livestock manure.

Cooperation with non-energy divisions will be expanded to develop projects that increase access to energy for the poor while achieving key sector goals.

Assistance will be extended to selected DMCs to analyze different options for universal access to electricity, which in turn should contribute to the development of a pipeline of projects that can be implemented with ADB assistance. Capacity building will be carried out among participating DMC governments, the private sector, financial institutions, and civil society to design and implement effective policies, programs, and projects for giving the poor access to energy through cleaner, renewable technologies.

Support will be given to the Energy for All Partnership for a selected number of projects that have demonstrated potential to become

"game changers" in the development of rural access to energy markets.

9. Clean Air Initiative for Asian Cities

The Clean Air Initiative for Asian Cities (CAI-Asia) was started in 2001 by ADB, the US–Asia Environmental Partnership (US–AEP, financed by USAID), and the World Bank as a flagship initiative for improved air quality. CAI-Asia was originally a team of consultants housed at ADB working on the agenda of better air quality. In 2007, ADB facilitated the creation of the CAI-Asia Center, a non-profit organization, to serve as the secretariat of CAI-Asia. This organization is now a registered UN Type II Partnership with over 200 organizational members and eight country networks. The CAI-Asia Center has served as the implementing agency for several ADB technical assistance projects. It celebrated its 10th founding anniversary in early 2011.

CAI-Asia focuses on translating knowledge to policies and actions that reduce air pollution and GHG emissions from transport, energy, and other sectors by (i) strengthening and harmonizing regional and national policies and standards; (ii) enhancing frameworks for the development of sound policies, programs, and urban development; and (iii) improving monitoring, measurement, and information on air quality, health, climate change, energy, and transport.

a. Key Achievements

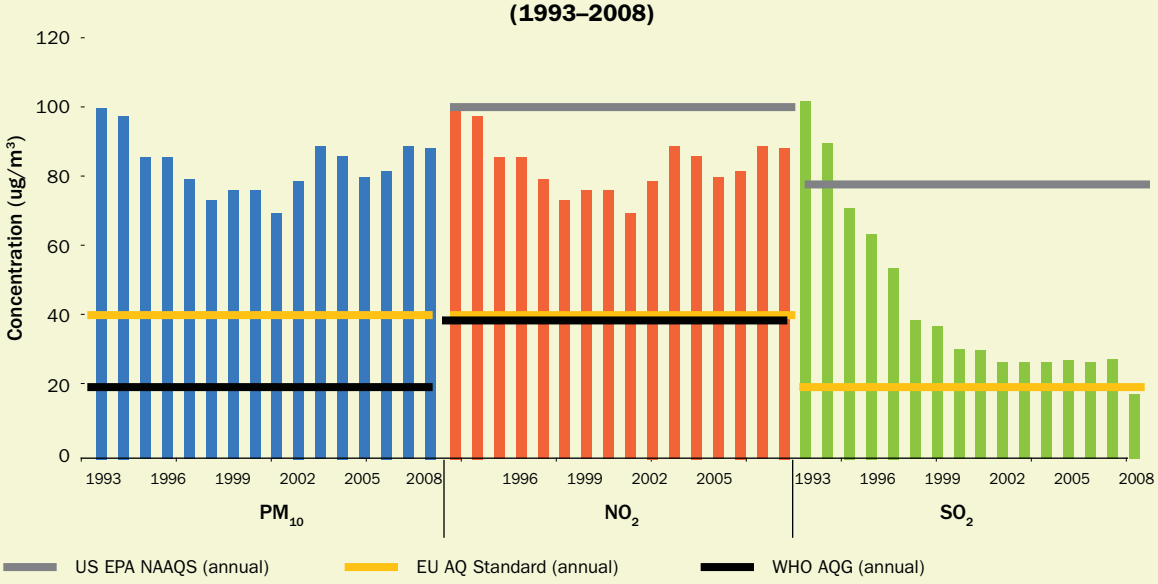
CAI-Asia has helped Asian cities pay attention to ambient air quality levels and air quality management (AQM), particularly in building institutional capacities in these fields. Such capacity building was carried out through knowledge management, training on AQM, and sustainable urban transport (SUT), and formulating improved strategy and action plan at city and national levels. CAI-Asia also organizes the Better Air Quality (BAQ) conferences, the largest gathering on air quality in Asia, covering transport, energy, industry, and climate change, with a particular emphasis on government policies and measures. Policy makers and practitioners meet at BAQ to network, learn, and share experiences. Past BAQs have influenced policies, initiated new projects, and established partnerships. The BAQ conference has been held biennially with ADB's core support since 2002.

CAI-Asia also played a part in improving regional dialogue on AQM and SUT through three Governmental Meetings on Urban Air Quality in Asia, which ushered in a Long-Term Vision on Urban Air Quality that was recognized by 15 environmental ministries as inspiring to develop and implement visions in Asian countries. CAI-Asia took part in the Dialogue for Cleaner Fuels in Asia, which produced the Road Map for Cleaner Fuels and Vehicles in Asia. AQM knowledge is becoming a new resource in high demand in a region trying to capitalize on a more intelligent and higher quality of life.

The CAI-Asia Center earned the reputation of being *the* knowledge hub on air quality in Asia, with its core program devoted mainly to air pollution and GHG emissions from transport, energy, and other sectors, and its ability to track trends. Launched in 2010, the Clean Air Portal replaced the CAI-Asia website (http://cleanairinitiative.org/) in providing updated and more integrated and interactive information on air quality, health, climate change, energy, and transport. The portal also houses the online forum on Air Quality and Co-Benefits, and for the Sustainable Transport community of practice, with the view to widespread dissemination of knowledge.

CAI-Asia collected available air quality monitoring data from over 200 Asian cities over the years to study air pollution trends in

Figure 3.07: Average of Annual Average Annual Ambient Air Quality in Selected Asian Cities (1993–2008)



µg/m³ = micrograms per cubic meter; US EPA = United Stated Environmental Protection Agency; NAAQS = National Ambient Air Quality Standards; EU = European Union; WHO = World Health Organization; AQG = air quality guidelines; PM_{10} = Particles with aerodynamic particle diameters of 10 micrometers or less; NO_2 = Nitrogen dioxide; SO_2 = Sulfur dioxide.

Source: Clean Air Initiative for Asian Cities (CAI-Asia) Center, 2010. "Air Quality in Asia: Status and Trends - 2010 Edition." Pasig City, Philippines. [Note: Air quality data is compiled by CAI-Asia Center from official sources (publications, personal communications) for 243 Asian cities – as of April 2010.]

Asian cities. Among its findings is that PM10 is still a major pollutant in Asian cities, with the average annual average PM10 concentrations measuring three times above WHO guidelines since 1993. Since 1995, most Asian cities have reported relatively low nitrogen dioxide (NO2) levels, with annual average concentrations well within the WHO air quality guidelines (AQG). Although there has been a marked decrease from 1993 to 2000, a number of Asian cities still have annual average SO_2 concentrations that do not meet even the 24-hour WHO Air Quality Guidelines (Figure 3.07).

b. Financing Resources and Partnerships

The CAI-Asia Center and its country networks draw support from several project donors, including ADB and private sector members. CAI-Asia partners include the World Bank, the former US–AEP, and the CAI-Asia Partnership, which has 212 members from international organizations, local and national governments, the academe, civil society, and the private sector.

c. Planned Activities

The CAI-Asia Strategy 2009–2012 outlines the direction of CAI-Asia, and a business plan is prepared every 2 years outlining priority activities. These activities relate to clean and efficient fuels and vehicles, air quality standards, the co-benefits of air quality and climate change management, and low-emission sustainable urban development (transport and energy use).

Planned activities with ADB support until 2012, which will likely be expanded include (i) the BAQ conference in 2012 with the following possible themes: sustainable cities and urban development, air quality and GHG monitoring and impacts, air quality management and

climate change mitigation, transport systems and modes, clean fuels, and vehicles; and (ii) the application of the Clean Air Scorecard to more cities in Asia. The scorecard was developed in 2009, and applied to Bangkok, Jakarta, and Manila in 2010. The scorecard is a tool for comparing air pollution levels, AQM, and GHG management abilities, and air quality. GHG policies and measures of selected Asian cities are the basis for providing further guidance to cities on how to improve air quality and reduce GHG emissions.

Subregional Initiatives

ADB continues to pursue several initiatives or programs to mainstream environmental considerations into the economic programs of subregions and countries. These initiatives and programs help restore, maintain, and enhance the productivity of natural resources for the improved economic and social well-being of those dependent on these resources, while preserving ecological functions. Selected initiatives and programs are described below.

1. The Greater Mekong Subregion Core Environment Program and Biodiversity Conservation Corridors Initiative (GMS CEP-BCCI)

The Greater Mekong Subregion (GMS) Core Environment Program (CEP) and its flagship Biodiversity Conservation Corridor Initiative (BCCI) aim to mainstream environmental considerations into the GMS Economic Cooperation Program. The CEP positively influences the strategies and choice of investments in the GMS, and synergizes subregional efforts in poverty reduction and biodiversity conservation. The GMS CEP is an innovative approach to mainstreaming the environment in the national development processes. Tools for mainstreaming include strategic environmental assessments and multicriteria analysis.

The GMS CEP-BCCI has been developed as a joint initiative of GMS member countries and was endorsed by the GMS Summit in July 2005. The work that CEP-BCCI carries out is governed by the Working Group on Environment, consisting of environment ministry focal points from each of the six countries (Cambodia, Lao PDR, Myanmar, the PRC, Thailand, and Viet Nam), 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 GMS CEP-BCI is anchored in the GMS Economic Cooperation Program, and is closely aligned with the GMS economic corridors. The program strives to achieve a shared vision of the countries of "a poverty-free and ecologically rich GMS." The focus of the program has been mainstreaming sound environmental management into the GMS Economic Cooperation Program (ECP) to enhance its development impact and sustainability.

Accordingly, it addresses three strategic areas that directly contribute to enhancing the competitiveness of GMS countries by promoting sustainable development. First, it strengthens ecosystems landscape management systems to maintain or enhance functions and services on which productive sectors like energy, tourism, and agriculture depend. Second, it addresses development and climate change pressures exerted on ecosystems by integrating environmental considerations in upstream subregional, national, and sectoral planning, processing, and safeguard capacity building. Third, it improves subregional and national environmental monitoring systems to inform policy decisions.

The program commenced in 2006 and will be completed on 31 December 2011. The program has recently been evaluated by an independent consulting team commissioned by the Government of Finland. The findings have generally been positive, with strong recommendations for funding a follow-on phase. The recommendations to improve program performance are currently being incorporated in the GMS CEP-BCCI program framework document (2012–2016), which will be endorsed by the GMS Environment Ministers in July 2011. The CEP-BCCI (2012–2016) will be closely aligned with the GMS Economic Cooperation Program (2012–2022), which is due to be adopted at the GMS Summit scheduled in December 2011.

a. Key Achievements

The BCCI aims to reduce the rate of ecosystems fragmentation in transboundary landscapes. Key achievements are described below.

Eight biodiversity conservation corridors have been established over the last 4 years, covering 2 million ha of forest area that contributed to maintaining ecosystems connectivity of a broader ecological landscape in the GMS.

The natural, social, physical, human, and financial assets of local communities living in these areas have improved. Communities have also strengthened their adaptive capacity in the face of development and climate change risks, resulting from the integrated conservation and development approach.

An enabling policy environment has been instituted, institutional set-ups and capacities strengthened, participatory methods on conservation practices promoted, and livelihood opportunities developed to reduce dependence on forest resources. The initiative also piloted local instruments such as commune development funds, community protected areas, and participatory land use planning.

The enabling environment for the scaling up of the BCCI concept across broader landscapes in Cambodia, Lao PDR, and Viet Nam has been provided, and has received loan/grants from ADB worth $69 million. Also, new protected areas, biodiversity corridors, and other BCCI activities have been established in Thailand and the PRC, which have mobilized their own budgets and other financial instruments following the GMS CEP-BCCI program model.

There has been increased transboundary cooperation, evident in the signing of bilateral agreements between transboundary nature reserves in Lao PDR, the PRC, and Viet Nam. The new Bulong nature reserve in Yunnan, the PRC, along the border with Myanmar, has been established.

Strategic environment assessments (SEAs) have been applied as a planning tool in economic corridor and sector development processes. This is seen in the power development planning (PDP VI and VII) of Viet Nam, the regional power trade planning of the GMS Regional Power Trade Coordination Committee, the planning of the North South Economic Corridor, the tourism sector in Cambodia, and the Golden Quadrangle in the GMS, and land use planning in Quang Nam province, Viet Nam.

The stage has been set for the planned assessment of cumulative impacts of the Southern Economic Corridor, which will apply an environmental lens to planned project portfolios under the recently developed strategy and build country capacity to strengthen safeguards systems to mitigate environmental concerns associated with economic corridor development.

There is continued institutionalization of the environmental performance assessment (EPA) in GMS countries to measure environmental performance of national, provincial, and sectoral policies. The second round of EPA

reporting for all the GMS countries has been completed. Through this approach, a robust biodiversity and socioeconomic monitoring framework has been developed for assessing progress in consolidating species, protected areas, and landscape-level outcomes in the eight biodiversity conservation corridors receiving program support.

Through the Environment Operations Center (EOC) based in Bangkok (Box 3.07), the development of several mapping tools and a spatial and temporal database and the systematic strengthening of regional environmental information management systems have been made possible. The GMS Atlas on the Environment is currently being produced. Together, these knowledge and management tools are being developed to support GMS countries in their efforts to establish readily available information to improve provincial and national decision-making systems. Design of joint indicators through the Environmental Performance Index (EPI) will support efforts to build and monitor cross-border and regional agreements to achieve commonly developed regional environmental management targets.

Box 3.07: The Core Environment Operations Center

Over the past 4 years, the Environment Operations Center (EOC) based in Bangkok has established itself as an operationally effective and efficient entity. The EOC is increasingly being recognized as a referral center within the GMS economic cooperation and development community, especially in areas of SEA, theory and practice of landscape-based integrated conservation and economic development, the science and practice of biodiversity corridors, Geographic Information System (GIS)-based spatial, multicriteria, and environmentally sustainable development planning, and as an information hub on climate change risk assessments. Currently, National Support Units are being established in each country to decentralize project implementation and increase efficiency of program delivery.eduled for late October 2011 in Bangkok.

Climate change has been increasingly integrated in the GMS CEP-BCCI program implementation and development to: (i) embed climate change risks and vulnerability assessment capacity with a focus on ecosystems services, livelihoods, and productive sectors (e.g., agriculture, energy, infrastructure, and tourism); and (ii) reduce CO2 emissions from land use change and sectors such as energy and transport. The program is developing a replicable framework to assess the risks of climate change for agrarian communities living in high biodiversity value conservation landscapes in the GMS, and to recommend how current coping capacities can be strengthened to minimize these risks.

The Carbon Neutral Transport Corridors Initiative (CNTC), designed to increase the fuel efficiency of freight and logistics operations and to increase country capacity to develop sequestration and reforestation projects, has been put in place. The CNTC study will introduce the idea of offsetting the carbon footprint on infrastructure, and securing sustainable financing for conservation (i.e., by internalizing the cost of carbon emissions of infrastructure projects and channeling these funds to finance conservation landscapes). GMS CEP-BCCI was successful in accessing $1 million from the Climate Change Fund for GMS countries to prepare for REDD.

Payment for ecosystem services (PES) has also been integrated as a part of the program's objective to mobilize sustainable financing mechanisms. In addition to raising awareness and creating an enabling policy environment, GMS CEP-BCCI is supporting the systematic institutionalization of PES in sector planning. The program is supporting the development of PES in Lao PDR, Thailand, and Viet Nam, and has facilitated exchange of knowledge, ideas, programs, and experience among all six GMS

countries, and between the GMS countries and the global community at large.

b. Financing Resources and Partnerships

The CEP is implemented and cofinanced by ADB, with funding from the Governments of Finland, Sweden, and the Netherlands and the PRC Poverty Reduction Fund (PRF). Its project implementation office is the Environment Operations Center, administered through ADB's Thailand Resident Mission.

The CEP has a number of strategic partnerships with conservation and environment organizations, such as Flora and Fauna International, the World Wide Fund for Nature (WWF), Mekong River Commission, and Wildlife Alliance, and collaborates with development agencies such as the United Nations Development Programme (UNDP), UNEP, World Bank, and USAID.

c. Planned Activities

In 2008, the GMS Environment Ministers recognized the significance of the program and requested to commence the preparation of a follow-on phase. ADB and the Environment Operations Center (EOC) are formulating the 2012–2016 program.

2. The Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security

The Coral Triangle in the Indo-Pacific seas is one of the most biodiverse areas in the world. It contains enormous marine resources that support economies and livelihoods and provide food security for an estimated 120 million people. The Coral Triangle is at great risk from natural habitat destruction, unsustainable fishing, and the impacts of climate change. To address these challenges, the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI) was launched in 2007 as a six-country program to protect coastal and marine resources. The participating countries include Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands, and Timor-Leste (CTI member countries).

a. Key Achievements

The CTI has mobilized resources from a variety of sources and partners for about $300 million. Further resource mobilization is anticipated from new partners and from the development of sustainable financing mechanisms. Important steps have been taken by the six CTI member countries toward addressing threats to the Coral Triangle through the collaborative development of a Regional Plan of Action (RPOA) and the preparation of National Plans of Action (NPOAs) to guide implementation. These actions were advanced at the CTI Summit, held in Manado in May 2009, where heads of state from the six governments signed a historic interstate agreement on implementation of the RPOA.

Continuing support of the GEF CTI Program was provided to participating countries through enabling and demonstration activities during the initial stage of the CTI. Through 12 subprojects implemented by four GEF agencies—ADB, FAO, UNDP, and the World Bank—the program will contribute to the achievement of the five goals of the RPOA. Ten of the 12 subprojects have been approved by the GEF Council for financing under GEF-4. The remaining two projects have been deferred for possible funding under GEF-5 (July 2010–June 2014).

ADB has five projects under the GEF CTI Program Framework. These are as follows:

(i) Regional Cooperation on Knowledge Management, Policy and Institutional Support to the CTI (TA–7307 REG), under Implementation from July 2010, with financing of $1.2 million from GEF, $500,000 from Regional Cooperation

and Integration Financing (RCIF), and a $168,000 Australian Grant;

(ii) Coastal and Marine Resources Management in the Coral Triangle of the Pacific, approved in December 2010, with $1.6 million from ADB and $13.12 million from GEF;

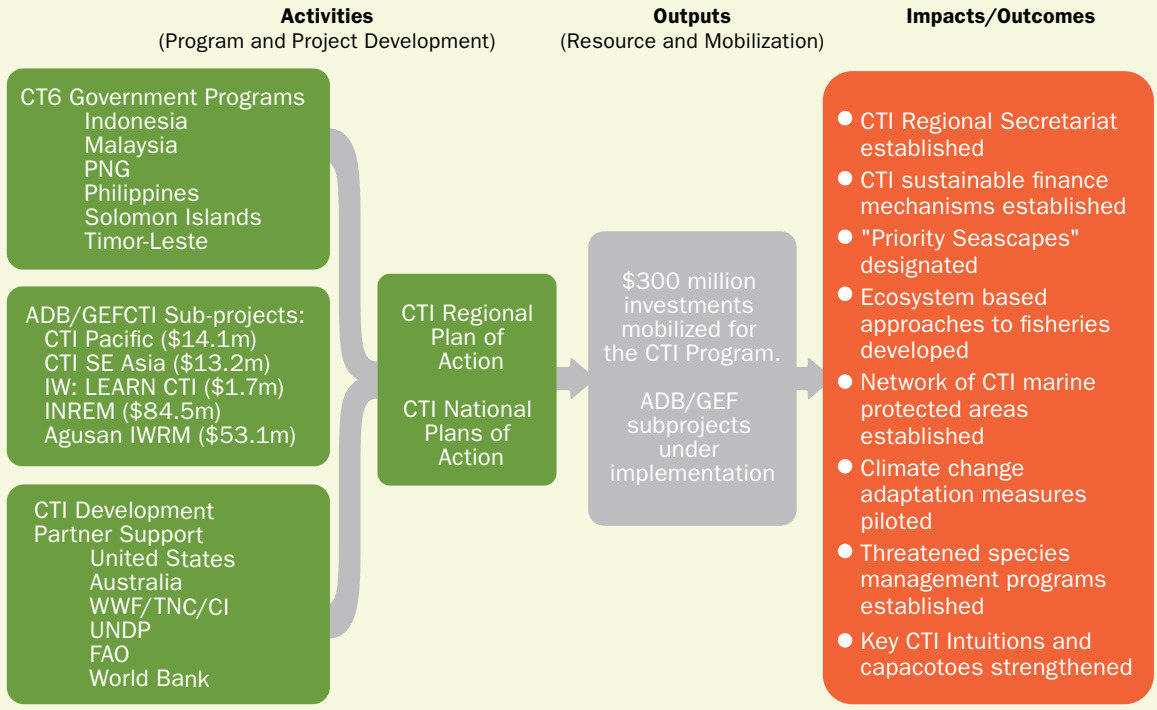
(iii) Coastal and Marine Resources Management in the Coral Triangle: Southeast Asia, for approval in 2011, with $1 million from RCIF, $11.22 million from GEF, and $2 million from the Japan Fund for Poverty Reduction (JFPR);

(iv) The Integrated Natural Resources Management Project, in preparation and for approval in 2011, with $100 million from ADB, $20 million from the International Fund for Agricultural Development (IFAD), $1.4 million from the ADB Climate Change Fund (CCF), and $2.5 million from GEF; and

(v) the Philippines Agusan River Basin Integrated Water Resources Management Project, in preparation and for approval in 2011, with $50 million from ADB and $3.18 million from GEF

A range of institutional mechanisms has been established by the collaborating governments to guide implementation of the program, including (i) a regional Council of Ministers, (ii) a Senior Officials group, (iii) an Interim Regional Secretariat, and (iv) National Coordinating Committees. An agreement was made at the most recent CTI Senior Officials Meeting in Jakarta, Indonesia in October 2010 that the Secretariat will be established in Manado, Indonesia by December 2011.

Box 3.08: The Coral Triangle Initiative



[CI=Conservation International; CTI = Coral Triangle Initiative; FAO=Food and Agriculture Organization; GEF=Global Environment Facility; INREM=Integrated Natural Resource and Environmental Management; IW LEARN=International Waters LEARN; IWRM=Integrated Water Resource Management; WWF= World Wide Fund for Nature; TNC=The Nature Conservancy; UNDP=United Nations Development Programme; SE Asia=Southeast Asia

b. Financing Resources and Partnerships

GEF provides the financial assistance for the CTI, and ADB serves as the lead GEF agency to organize a program of international technical and financial support. The participating countries are CTI member countries, along with Fiji and Vanuatu. Development partners include ADB, GEF, the Governments of Australia and the United States, the UNDP, FAO, the World Bank, and environmental nongovernment organizations: Conservation International (CI), The Nature Conservancy (TNC), and WWF.

c. Planned Activities

Projects in each country will be supported by the national governments, with assistance from ADB and other key development partners (Box 3.08). Activities will support the implementation of agreed CTI regional and national plans of action. A copy of the RPOA, with specific targets and indicators, can be found at http://www.uscti.org/uscti/Resources/CTI%20Regional%20Plan%20of%20Action_June%2023%202009.pdf.

Program outcomes will include (i) the designation and enhanced management of priority seascapes; (ii) the establishment of ecosystems-based approaches to fisheries management; (iii) the establishment and effective management of marine protected areas; (iv) increased resilience of coastal ecosystems and communities to climate change; and (v) improved status of threatened species. In addition, the initial phase of the CTI will support the establishment of a Regional Secretariat, the development of sustainable financing mechanisms, and capacity strengthening for national and local institutions.

ADB-supported CTI projects will be implemented from 2010 to 2017. ADB and other development partners will support a broad range of outputs to achieve the NPOA and RPOA goals, as well as building national and local capacities to institutionalize, upscale, and replicate further actions. Key areas of focus will include (i) strengthening the legal, policy, and planning environment for improved water, coastal, and marine resources management in the participating countries; (ii) improving the capacity of key government agencies and other participating stakeholders in civil society, the academe, the private sector, and at the community level; (iii) building and sustainably financing resilient systems for water, coastal, and marine resource management; (iv) managing environmental threats to international waters from both land and sea; (v) increasing resilience of coastal and marine resources to climate change; (vi) monitoring and knowledge management; and (vii) program coordination and management.

3. Heart of Borneo Initiative

The Heart of Borneo (HoB), which straddles Indonesia and Malaysia and parts of Brunei Darussalam, contains the largest contiguous forest area remaining in Southeast Asia, and is one of the most biologically diverse habitats on earth, where elephants, orangutans, rhinoceros, and cloud leopards share the same territory. On the average, three new species were discovered every month in the HoB area between 1995 and 2005.

There are many challenges to the conservation of the HoB. The natural capital harbored within the area is of great commercial interest. The island of Borneo has seen immense change over the past century. By the 1980s, major commercial operations were eating away at the once untouchable and impenetrable forests. The last 20 years of the century saw more timber cut and traded from Borneo than from the Amazon and Congo regions combined. Timber companies, palm oil plantations, mining operations, hydropower, and other infrastructure developments are all

key players within the HoB landscape. There are 73 forest concessions covering 25,000 km^{2,} and mining and palm oil concessions covering another 10,000 km^2. Thus, the biggest threat is from forest conversion into rubber and oil plantations, logging for timber and pulp production, forest fires, oil and mining industries, and illegal wildlife trade. Protection of the remaining forest is also weak, as over 50% of the HoB is outside protected areas. All these contribute to the considerable loss in forest biodiversity and GHG emissions from deforestation and degradation. As a result, only about half of Borneo's original forests remain, down from 75% in the mid-1980s.

To help address these issues, Brunei Darussalam, Indonesia, and Malaysia signed a historic declaration in 2007 establishing the HoB Initiative. The declaration provides a framework for cooperation on the HoB and commits the three countries to preparing strategic and operational plans and joint road maps for realizing "One Conservation Vision." As part of this process, a series of trilateral meetings have been held, the latest of which was in late October 2009 in Sabah, Malaysia. At the meeting, the three countries presented their National Strategic Plans of Actions for further discussion.

a. ADB Initiative on the Indonesian Side of HoB

In support of the HoB Initiative, ADB has prepared a proposal on Sustainable Forest and Biodiversity Management in Borneo (Heart of Borneo) as part of the Brunei Darussalam, Indonesia, Malaysia, and the Philippines East ASEAN Growth Area (BIMP-EAGA) Regional Environment Program (REP). The project aims to ensure effective management of forest resources and biodiversity in Indonesian Borneo for the benefit of present and future generations through country and local actions and cooperation involving all stakeholders.

The proposed project has the following components: (i) policy and institutions; (ii) management of land use, land-use change, and forestry; (iii) protected area management; (iv) sustainable forest management and livelihoods; and (v) sustainable financing mechanisms. It seeks to strengthen institutions and establish appropriate policies to mainstream biodiversity conservation, implement sustainable forest management, and improve land-use plans.

Under the HoB Initiative, a strategic framework will be prepared for the management of Borneo forest resources for biodiversity conservation, forest conservation, and reduction of GHG emissions. Also, systems to measure and reduce GHG emissions will be developed and adopted. To protect and conserve forest resources, sustainable livelihood activities that will generate sufficient revenues will be implemented. The HoB Initiative will be guided by the progress and outcomes of the ongoing local, national, and regional initiatives toward collective conservation and sustainable management.

A grant project from the GEF of $2.5 million has recently been approved by the GEF Council for the HoB Initiative. It is also expected that a further $1 million in cofinancing will be provided by ADB CCF to support the development and adoption of systems and measures to reduce GHG emissions from deforestation and degradation.

b. UNDP Initiative on the Malaysia (Sabah) Side of the HoB

The focus of the UNDP proposed project is to institutionalize a multiple-use forest landscape planning and management model, which brings the management of critical protected areas and connecting landscapes under a common management umbrella. Implementation will be sustainably funded by revenue generated within the area. There are three components: (i) the formulation of an enabling environment

for optimized multiple use planning, financing, and management and protection of forest landscapes; (ii) the demonstration of multiple-use forest landscape planning and management systems; and (iii) sustainable financing of protected areas and associated landscape areas at the demonstration site. The more narrowly focused project has an allocated GEF funding of almost $5 million, with about $8.8 million cofinancing from the government.

c. HoB-wide Programmatic Initiative

ADB and UNDP have been discussing the formulation of a HoB-wide program to bring the two projects closer together in terms of implementation and coordination, as well as to involve Brunei Darussalam in the regional initiative. The program will support the formulation, refinement, and implementation of a regional strategic plan of action for HoB. If this pushes through, the proposal will be considered in GEF-5.

d. Partnerships

ADB is working closely with the three governments, GEF, and other partners, including WWF, TNC, UNDP, and the provincial governments in project areas. For the ADB-led project, WWF Indonesia is a potential partner for the HoB initiative, given its extensive experience in the area. For the UNDP project, the Sabah State Government is the primary partner.

4. The PRC–GEF Partnership on Land Degradation in Dryland Ecosystems

The People's Republic of China–Global Environment Facility 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.

a. Key Achievements

Through the 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 (IEM) 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 country 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.

b. Financing Resources and Partnerships

The ADB, International Fund for Agricultural Development (IFAD), and the World Bank have ongoing projects or have previously endorsed GEF-supported investment projects under the PRC–GEF Partnership. The partnership now comprises a portfolio of investment and capacity building projects of over $600 million, of which about $45 million was provided by GEF.

c. Planned Activities

ADB's support includes the Ningxia Integrated Ecosystem and Agricultural Development Project (a $100 million loan), the Forestry and Ecological Restoration Project in Three Northwest Provinces (a $100 million loan), and the TA Management and Policy Support for Combating Land Degradation in Dryland Ecosystems ($2.9 million). The Ningxia Project will help the local government improve land management and conservation of critical ecosystems through application of an IEM approach to provincial economic development efforts. The forestry project will enhance

and restore the productive and protective functions of degraded dryland ecosystems leading to improved livelihoods, reduced land degradation, and biodiversity conservation.

The TA project aims to (i) further scale up the partnership's investment activities, (ii) seek further cooperation and integration with other ongoing programs in and outside the PRC, (iii) disseminate experiences with associated policy and institutional reforms, and (iv) introduce innovative approaches to combating land degradation. These approaches include (a) cross-sector studies on land degradation control and carbon sequestration (including forest, grassland, and farm land); (b) economic and cost–benefit analysis for land degradation control, including developing methodologies to establish public–private partnerships; (c) pilot studies on payment for ecological services and other ecological compensation mechanisms, and their impacts on sustainable land degradation management; and (d) development of a comprehensive land degradation assessment and monitoring system.

ADB support will focus on strengthening (i) the coordination of projects under the PRC–GEF Partnership; (ii) communications with the public and private sectors, while encouraging private sector involvement; and (iii) communication cooperation, along with exchanging achievements, experience, and information with international partners. The PRC–GEF Partnership will also strengthen links with the PRC–GEF Biodiversity Partnership Framework for closer collaboration during the design and implementation of related projects. The State Forest Administration (SFA) will commission an independent evaluation of the achievements of the PRC–GEF Partnership, as supported through GEF-3 and GEF-4 financing. Land degradation monitoring and assessment procedures will have to be refined and applied to existing projects within and outside the PRC–GEF Partnership, including the PRC National Committee for the Implementation of the United Nations Convention to Combat Desertification (UNCCD) and the Land Degradation Assessment in Drylands Project, which is also implemented by the SFA.

C. Partnerships

Responding to Asia's environmental challenges requires the full engagement of all development partners across the region, with each bringing its own skills, interests, and objectives. To complement core competencies and ensure targeted results, ADB continues to maintain partnerships with environmental nongovernment organizations such as WWF and the International Union for the Conservation of Nature (IUCN), civil society, other development institutions, including the United Nations and GEF, and the private sector.

1. The Global Environment Facility (GEF)

ADB has been working closely with GEF since the mid-1990s. With the approval of ADB's direct access to GEF full project resources in 2002, the partnership has been further strengthened. ADB's portfolio of GEF projects has covered a range of focal areas, with projects focused on biodiversity conservation and natural resource management, sustainable land management and energy efficiency, and climate change adaptation.

Over the next four years, it is anticipated that ADB's partnership with the GEF will further increase. The fifth replenishment of the GEF was concluded in May 2010 with $4.35 billion in resources to support the achievement of global environmental benefits from July 2010 to June 2014. For Climate Change Adaptation, the GEF is also seeking to mobilize at least another $1 billion over the next 4 years to support adaptation to climate change through the Least Developed Countries Fund and the Special Climate Fund, which will assist in

financing the costs of implementing National Adaptation Programmes of Action and other national adaptation strategies.

As of the first quarter of 2011, six ADB-GEF projects, including five country-specific and one regional project, were endorsed by the GEF CEO in 2010 for a total of $36,681 million. These projects include (i) the NEP: Kathmandu Sustainable Urban Transport; (ii) the PRC: Integrated Ecosystem Management and Environmental Protection of Baiyangdian Lake Catchment; (iii) PRC: the Integrated Renewable Biomass Energy Development Project; (iv) INO: Citarum Watershed Management and Biodiversity Conservation Project; (v) PRC-GEF Partnership: Forestry and Ecological Restoration Project in Three Northwest Provinces (formerly Silk Road Ecosystem Restoration Project); and (vi) REG: Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific.

These projects benefit the global environment and promote sustainable livelihoods in local communities. In 2010 alone, ADB was able to access GEF cofinancing of almost $48 million ($36.7 million for projects with CEO endorsement and $11.3 million for projects in various stages of approval).

In addition, ADB is also working with DMCs and other partners in the region to develop three new major programmatic approaches:

- The Asian Sustainable Transport and Urban Development Program (ASTUD) is being designed to support Asian cities in realizing GHG reductions and local co-benefits through the implementation of low-carbon transport infrastructure and supportive land-use planning and demand management. Implementation of the program will be supported by ADB's Sustainable Transport Initiative and will link to more than $2 billion in ADB's investments in mass rapid transit infrastructure.

- A new Forests and Biodiversity Program in the Greater Mekong Subregion (GMS) is also being developed to enhance regional cooperation on the management of transboundary conservation landscapes, while supporting national actions for biodiversity conservation, sustainable forest management, climate change adaptation and mitigation, threatened species protection and sustainable livelihoods. The program will build on ADB's current support to GMS countries through the Core Environment Program and Biodiversity Corridors Initiative (CEP-BCI).

- A Pilot Asia-Pacific Climate Technology Network and Finance Center will be developed in a program to be implemented jointly with the UNEP. The objective is to accelerate climate technology investments in developing countries of Asia and the Pacific with a focus on four main areas. First, it will form partnerships to foster knowledge-sharing and collaboration in such areas as R&D, analytical work, capacity building, and project financing. Second, it will create enabling environments to remove barriers to private sector-based innovation, transfer, and diffusion of climate technologies. Third, it will foster local innovation to ensure that technologies are appropriate for the needs of local communities, families, and individuals. And fourth, it will mobilize finance to make concrete transactions happen for identified priority investments.

2. The World Wide Fund for Nature (WWF)

ADB and WWF signed a Memorandum of Understanding (MOU) in 2001 toward the sustainable management of natural resources in Asia and the Pacific. The partnership builds

on synergies of each organization's strengths and their shared vision of poverty reduction and environmentally sustainable development. It has mainly focused on the management of some critical ecosystems in the region through three regional environmental initiatives—the Greater Mekong Subregion CEP, the Coral Triangle Initiative, and the Heart of Borneo Initiative. Opportunities are being explored for joint work on the Living Himalayas Initiative. Activities center around joint projects and programs, information sharing and knowledge management, capacity building, and the development of sustainable development policies and strategies. ADB and WWF have conducted annual consultations since 2002 to review progress of MOU activities, discuss new areas of focus, and conduct joint programming.

In October 2010, ADB and WWF organized several side events at the Conference of the Parties to the Convention on Biological Diversity held in Nagoya, Japan to highlight the importance of joint actions to sustain biodiversity and promote sustainable development in the region. Cooperation between the two organizations continues to expand in developing approaches for conserving and managing forests, protecting coastal ecosystems, and implementing ecosystem-based adaptation.

WWF has placed a partnership manager in ADB to help facilitate greater collaboration between the two institutions. In addition, the WWF International Director General visited ADB Headquarters in October 2010 (as part of the ADB–WWF annual consultation) to discuss existing programs, as well as to explore new collaborations on issues of climate change, natural resource management and use, biodiversity conservation, and water. The WWF International Director General presented the ADB President with a certificate of appreciation for ADB's work promoting environmental sustainability in Asia and the Pacific.

3. International Union for the Conservation of Nature (IUCN)

The partnership between ADB and IUCN was established in 2004, and aims to support poverty reduction at the regional and subregional levels in Asia and the Pacific. ADB and IUCN collaborate in the fields of environmental law, poverty and environment linkages, biodiversity, environmental impact assessment, project monitoring, and coastal resources management. A joint publication—*Poverty, Health, and Ecosystems: Experience from Asia*—has also been completed. Ongoing collaboration includes the Clean Air Initiative for Asian Cities and inputs into ADB's GMS CEP and BCCI . An annual consultation with IUCN was held in December 2010. Climate change, particularly ecosystem-based adaptation, and environmental governance were discussed as possible key areas for future collaboration.

4. United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)

Since 1990, ADB has been a close partner of the 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 and UNESCAP, together with UNEP, are currently collaborating on the preparation of the report *Green Growth, Resources, and Resilience*, a preview of which was launched and circulated during the Sixth Ministerial Conference on Environment and Development (MCED-6) in Astana, Kazakhstan in September 2010. The report identifies key priorities, policy bottlenecks, and quick wins, as well as specific issues on which the region can lead the quest

for greener, more inclusive and resilient growth. The report will be a key regional input into the Rio+20 process.

5. United Nations Environment Programme (UNEP)

ADB and UNEP are cooperating to promote green growth throughout Asia and the Pacific. Currently, UNEP and ADB are collaborating on implementing the GMS CEP, promoting APAN, and developing the proposals for strengthening country safeguard systems for Mongolia and Timor-Leste. UNEP is also a partner in the preparation of the *Green Growth, Resources, and Resilience* report. As member of the Advisory Panel, ADB recently attended the 13th Annual Advisory Meeting of the Regional Resource Centre for Asia and the Pacific, a joint initiative by UNEP and the Asian Institute of Technology.

6. The Institute for Global Environmental Strategies (IGES)

ADB and the Institute for Global Environmental Strategies (IGES) signed a Letter of Intent on December 2010 to cooperate to support environmentally sustainable growth throughout Asia and the Pacific. The LOI aims to guide and further strengthen the relationship between ADB and IGES based on mutual interests. Areas for collaboration include (i) climate change, including economic analysis, carbon market, forest management, local and global co-benefits, and adaptation; and (ii) environmental management, including sustainable infrastructure, natural resource management, groundwater management, and environmental governance. During the April 2011 visit of the IGES Chair of Board of Directors to ADB, various areas for collaboration (e.g., on energy and disaster rehabilitation, Clean Development Mechanism capacity building, 3R, AECEN, APAN, study on groundwater issues in the region, inputs to outcome of RIO+20), the timing of ADB and IGES annual review, and major conferences for ADB and IGES participation were discussed.

7. Asian Environmental Compliance and Enforcement Network (AECEN)

ADB played a key role in establishing the AECEN in 2005, along with USAID and other development partners. AECEN's objective is to improve compliance with environmental laws in Asia through a regional exchange of policies and practices. Members of AECEN are national and subnational agencies from Asian countries committed to improving compliance and enforcement through regional cooperation and information exchange. Members presently include environmental agencies from Cambodia, India, Indonesia, Japan, Lao PDR, Malaysia, Maldives, Nepal, Pakistan, the PRC, the Philippines, the Republic of Korea, Singapore, Sri Lanka, Thailand, and Viet Nam.

In June 2010, ADB and AECEN jointly organized a regional workshop entitled Environmental Impact Assessment (EIA) in Asia: Good Practices and Capacity Needs at ADB Headquarters in Manila on 9–10 June 2010. The workshop (i) took stock of the status and advances of EIA practices in participating countries; (ii) provided an update on international best practice, including the evolving safeguard policies of multilateral development banks; and (iii) identified key challenges in strengthening country safeguard systems for better application and compliance with EIA requirements. The workshop brought together senior environmental agency officials and technical experts from 20 countries across Asia and the Pacific, along with representatives from MDBs, bilateral agencies, and international experts on EIA.

8. The United States Environmental Protection Agency (USEPA)

In 2010, ADB signed an LOI with the USEPA, extending its 2005 LOI, to explore possibilities for effective collaboration on the environment, sustainable development, and natural resource management. This includes cooperation on (i) improving air quality management (AQM), especially in urban areas; (ii) improving the provision of safe 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 GMS, 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 technical assistance 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.

In 2010, the USEPA held a technical session in a regional workshop, Environmental Impact Assessment in Asia: Good Practices and Capacity Needs, at ADB Headquarters. The session focused on implementation of environmental management and monitoring plans. 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 Clean Energy Program (CEP) on environmental governance, especially multijurisdictional management of transboundary ecosystems.

IV. Looking Forward

Under Strategy 2020, ADB is strengthening its operational emphasis on the environment to help realize environmentally sustainable growth for the region. In its policies, strategies, programs, and projects, ADB will continue to (i) help DMCs tackle a range of environmental problems, including addressing the causes and consequences of climate change resulting from rapid urbanization, while at the same time reducing the carbon footprint; and (ii) mainstream 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 help address some of the negative consequences of current growth patterns by improving environmental management in the region. Consistent with the "green growth" agenda, efforts in this area will seek to reconcile the quest for increasing GDP with the need to protect fragile renewable resources, a decline in environmental quality, and a diminishing base of non-renewable resources.

Green growth must involve improving "eco-efficiency," characterized by using fewer materials, energy, water, and land, as well as reducing environmental damage (including through GHG emissions) per unit of economic activity. This can only be accomplished by, among other things, (i) maximizing the use of renewable resources while minimizing pollution and other negative impacts on the natural environment; (ii) serving the needs of local communities, including the poor; (iii) controlling wasteful public spending and corruption; and (iv) finding appropriate roles for the public and private sectors in financing, ownership, and management. At the highest level, it involves systems innovation, such as the introduction of distributed energy systems based on renewable energy and urban redesign, allowing for new forms of mobility for people and goods.

A good portion of ADB's environmental assistance will continue to target issues that are local in their source and scope, including the degradation of natural resources, the increased generation of hazardous waste, and urban air and water pollution. The latter includes traditional pollutants, such as SO_2, PM, organic pollutants, and excessive nutrients. The benefits of controlling such pollutants through structural investments and nonphysical assistance (e.g. establishing market-based arrangements for pollution control) often outweigh the costs, with the poor benefitting more.

Recognizing that many environmental impacts transcend political boundaries, ADB will also seek to improve the management of regional public goods, as emphasized in Strategy 2020 and supported by ADB's Regional Cooperation and Integration Strategy. This will include supporting regional and subregional policy dialogue and initiatives to manage the impact of climate-related and other natural disasters, promote low-carbon development, reduce the loss of biological diversity, and promote sustainable land management.

Continued poverty reduction in Asia and the Pacific will not be possible without proactive efforts to mitigate the causes of global warming and help the region—especially its most vulnerable citizens in both rural and urban settings, the poor, women, children, and the elderly—to adapt to the impacts of climate change. With the international community now responding to threats from climate change, the financing needs for adaptation and mitigation measures, as well as knowledge innovations in a range of sectors and thematic areas, will be enormous.

There is also a heightened need to promote integrated approaches in designing ADB projects to yield multiple environmental, economic, and social benefits. For example, investments in sustainable transport and urban planning help reduce GHG emissions and air and water pollution, and improve urban mobility, access to markets, and public health. Likewise, investments and TA to improve forest and land management can reduce GHG emissions while improving watershed protection and biodiversity conservation.

Because of the tremendous diversity of conditions across the region, differentiated responses will be required that are based on the degree and type of country vulnerabilities, natural resource conditions as well as pollution levels, including GHG emissions. However, a constant in all activities will be a simultaneous fostering of poverty reduction and promoting improvement in the livelihoods of local communities alongside environmental quality gains.

In the medium term, the operational program on the environment, including climate change, will focus on delivering results through three mutually supportive strategic directions:

- **Promoting transitions to sustainable infrastructure.** The focus in this priority area will be on assisting DMCs in building infrastructure that contributes to environmental sustainability, including those that will counteract the causes and consequences of climate change.
- **Improving natural resource management and maintaining ecosystem integrity.** ADB's aim in this priority area is to reverse the ongoing decline of Asia's natural capital, including shrinking forests, declining biodiversity, disappearing water sources, and degraded lands.
- **Building environmental governance capacity**. As a crosscutting complement to these two strategic directions, ADB will continue to help build sound environmental governance and management capacities.

Climate change mitigation and adaptation considerations will continue to be embedded in and cut across the environment strategic directions.

To achieve the results of these priority directions, emphasis will be placed on building on and enhancing existing procedures and practices in (i) mainstreaming environment into ADB operations, (ii) mobilizing and channeling financial resources, (iii) engaging the private sector, (iv) maintaining and building strategic partnerships, and (v) developing knowledge solutions.

Efforts to mobilize the necessary financial, technical, human, and other resources will be

further enhanced. There will be continuing emphasis on project and program investments to promote environmental improvement in the region, along with an expanded use of TA resources. Additional public and private financial resources will continue to be mobilized and leveraged to supplement ADB's resources, including innovative market mechanisms such as payment for ecosystem services, REDD-plus, and water pricing. Partnerships will continue to be developed to provide access to complementary knowledge and expertise.

The following section highlights ADB's approaches and initiatives under each strategic direction.

A. Promoting Transitions to Sustainable Infrastructure

DMCs will be assisted in building infrastructure that contributes to environmental sustainability, including the design of new urban and rural infrastructure, as well as to the re-design, rehabilitation, re-use, or optimization of existing infrastructure. Initiatives in the following sectors will guide ADB's operations:

Clean energy. Support for clean energy, including energy efficiency improvements and development of renewable energy sources, will be expanded to reach the target of $2 billion per year by 2013. Barriers to the introduction of low-carbon technologies will be removed, and the transfer, development, and dissemination of low-carbon and climate-resilient technologies will be supported. To improve energy efficiency, demand-side and supply-side measures will be given priority.

DMCs will be assisted to prepare enabling legislation and efficiency standards, identify efficiency options, and raise public awareness. To pursue this, partnerships will be sought with industries, domestic banks, and specialized energy efficiency agencies and energy service companies. Considering the global interest in biofuels, support for further studies will be made to assess the costs and benefits of sustainable biofuels development, particularly for food security, the net energy balance of crops, and environmental impacts.

To catalyze much-needed clean energy investments in the region, use of concessional funds will continue. ADB will continue to leverage additional resources from the private sector. Dedicated financing sources include the Climate Investment Fund, Clean Energy Financing Partnership Facility and the Climate Change Fund. ADB's Clean Energy Program and planned activities are presented in Chapter 3.

Sustainable transport. ADB's Sustainable Transport Initiative (STI) supports lending and technical assistance for transport systems that are accessible, affordable, safe, and environment friendly. Guided by its "avoid–shift–improve" approach, the STI focuses on three main categories for transport operations. First, continuing needs and challenges will be addressed where ADB already has a track record of effective operations, focusing mainly on roads. Successful approaches will be replicated on a larger scale. Innovative approaches will be promoted to attract additional public and private sector financing to expand the scale of investments.

Second, new or enhanced operations to address emerging needs and challenges will be introduced, with priority given to (i) urban transport (public transport systems, non-motorized transport, integrated urban transport planning, and demand and traffic management); (ii) activities to address climate change associated with transport (shifting to modes with lower emissions and energy consumption, mainstreaming climate

adaptation measures); (iii) cross-border transport and logistics (investment programs that create competitive, more efficient, and cleaner modes of cross-border transport, such as through regional railway networks instead of road networks); and (iv) road safety and social sustainability (safe design, construction, operation, and maintenance of road infrastructure, plus the introduction of design elements with environmental benefits).[28]

Third, a focus will be on future sustainable transport operations that require research, consultation, and pilot testing. Examples include (i) sustainable transport development plan preparation, (ii) promotion of advanced approaches to transport demand management and road pricing, (iii) studies of intelligent transportation systems, and (iv) the introduction of sustainable vehicle-related technologies.

Water. Resources for investments in water infrastructure, including investments in comprehensive waste management and sanitation systems that provide benefits for households will continue to be mobilized. In these efforts, water will no longer be addressed in isolation from the sectors that it relates to most closely. The water-energy-food nexus, coupled with climate change impacts, will be foremost in the design of transformational water agendas across the region.

At the same time, ADB understands that supply-side options are not only limited, but very much more expensive. Thus, with an emphasis on improving water efficiency, water-related policies and regulatory measures that manage demand to extraordinarily high standards are needed throughout the region. To accomplish this, water must be priced more universally and explicitly as an economic good, and its physical use must be governed by water markets and regulators that will ensure the right balance between competing uses. The entire business of water management requires a collaborative approach between the public and private sectors, and within the different levels of government, from central to local administrations.

The central design feature for rural and agricultural water supply will be achieving efficiency gains, whether the project relates to enhancing irrigation productivity (e.g. through genetic crop development or micro-irrigation), developing new irrigation infrastructure (e.g. drainage improvements, artificial recharge), or watershed development and rehabilitation (e.g. physical restoration, coupled with sustainable management systems).

In the urban sector, efficiency gains will be ensured by supporting non-revenue water reduction, tariff reform, improved asset management, network rehabilitation, and corporate restructuring. Supply-side measures, including the development of new water sources, expanding storage capacity, and completing other infrastructure to augment water supplies, will be supported, but only when coupled with efficiency gains elsewhere.

To support these interventions, water governance, performance, and knowledge management, including the development of knowledge networks to better draw on the region's rich experience, will be improved.

Livable cities. DMCs will be supported in increasing the role of cities in improving the quality of life of their residents, reducing carbon footprints, and adapting to climate change. Aside from clean energy and sustainable transport, other urban investments include (i) green utilities (e.g., smart grids, distributed power, district heating and cooling, solid waste, wastewater and water supply, and climate resilient infrastructure); (ii) city greening (e.g., parks, enhancing urban biodiversity and microclimates, and natural

[28] ADB. 2010. *Sustainable Transport Initiative Operational Plan*. July.

breezes); and (iii) green industrial complexes or eco-industrial parks. Nonstructural investments will focus on support systems at the local level, such as the introduction of city carbon information bases, awareness campaigns, capacity building in project preparation, environmental and building code updates, evaluation of climate change risks and adaptation options, and disaster risk management planning.

Enhancing the climate resilience of infrastructure investments. ADB will continue to climate-proof its infrastructure investments and assist DMCs in doing so to ensure that outcomes are not affected by climate variability and change or by natural hazards. Climate proofing must be embedded into the project cycle, beginning with preliminary risk screening and, if required, a detailed impact, vulnerability, and adaptation assessment to minimize costs and maximize effectiveness. Specialized simulation tools will be used in many project-level adaptation assessments to determine the likely impacts of specific environmental changes on project performance. Moreover, economic analysis of adaptation options will be conducted at the project level, where possible, in order to support rational and least-cost adaptation actions. In some instances, unreasonably high costs of climate-proofing measures call for identification of alternatives, or even reconsideration of the project.

B. Improving Natural Resource Management and Maintaining Ecosystem Integrity

ADB's assistance to DMCs in this area is based on the fact that ecosystem services are critical to the sustenance of life on earth. These services include (i) the provision of food, water, timber, and fiber; (ii) regulation of climate, floods, disease, wastes, and water quality; and (iii) the provision of cultural services and supporting services such as soil formation, photosynthesis, and nutrient cycling.[29] DMCs' efforts to reverse the decline, in both quantity and quality, of the region's natural capital, including forest, biodiversity, water, and soil resources, will be supported. One dominant factor is the fact that well managed ecosystems can also help reduce GHG emissions, while at the same time increasing resilience to the impacts of climate change. Also, the poor are particularly and often directly dependent on viable ecosystems for their livelihoods.

To address these issues, efforts toward acquiring better information on the economics of ecosystems and biodiversity, along with appropriate policies, regulations, and financial mechanisms to help protect and sustain ecosystem services, will be supported. To these ends, investments will increase in the region's ecological infrastructure to scale up and replicate proven approaches and robust regulatory frameworks that establish environmental and biodiversity safeguards, standards, and liability regimes. In addition to project investment and technical assistance activities, such measures will be supported through partnerships and knowledge management. These measures will be carried out in four main areas: (i) sustainable forest and land use management, (ii) water resources management, (iii) coastal and marine resources management; and (iv) ecosystem-based adaptation.

Sustainable forest and land management. Given the significant role that forest and land use management plays in local and global responses to the causes of climate change, Strategy 2020 calls for ADB to become involved in promoting such management. These interventions will push forest and soil

[29] Millennium Ecosystem Assessment (2005). Ecosystems and Human Well-being: Biodiversity Synthesis. World Resources Institute, Washington, DC.

carbon sequestration and other benefits such as community development, biodiversity conservation, food security, and watershed protection. ADB's assistance to DMCs in promoting sustainable forest management will provide these countries with opportunities to finance mitigation, using the REDD approach. The institutional capacities of relevant government agencies, particularly in the face of climate variability, will continue to be strengthened. The establishment of legal, policy, and planning frameworks, including the removal of damaging incentives and subsidies contributing to biodiversity decline, will be supported.

Integrated water resource management. In this area, ADB supports the adoption of integrated water resource management systems across river basins to improve the sustainability and resilience of water resources, and to reduce vulnerability to floods, droughts, and climate variability. To improve risk management of water-related disasters, appropriate climate change adaptation measures, including disaster preparedness, climate change impact and vulnerability assessments, and integration of adaptation and resilience strengthening measures in water resource management systems will be supported.

Coastal and marine resources management. ADB's support in this area is aimed at (i) enhancing the ecosystem's resilience to climate change impacts, (ii) protecting food security, and (iii) improving the livelihood and development opportunities for coastal communities, especially in small island countries in the Pacific. DMCs' efforts to improve their policy, legal, regulatory, and coastal zone planning frameworks to ensure the conservation and management of critical resources, including enhanced management capacity for marine protected areas, will be supported. Capacity building measures will also be supported for improved resource management, including community-based management approaches. Other areas of focus include improved disaster risk management and enhanced resilience of coastal and marine ecosystems to climate change, including ecosystem-based adaptation.

Incorporating ecosystem-based approaches into climate change adaptation. Activities that restore and protect biodiversity can be important components of broader climate change adaptation strategies, and can generate a wide range of co-benefits. Ecosystem-based approaches to adaptation—including the sustainable management, conservation, and/or restoration of critical ecosystems—can generate substantial economic and cultural co-benefits in addition to preserving and enhancing ecosystem functions, and they should be exploited as cost-effective approaches toward establishing societal resilience. For instance, coastal stands of mangroves can help mitigate the impacts of sea level rise and storm surges, complementing the protection of healthy upstream wetlands in attenuating downstream flooding. Other opportunities are provided by reforestation and agroforestry activities that create both sustainable livelihoods and environmental services, including water quality management and carbon sequestration, in addition to direct ecological benefits.

C. Building Environmental Institutional Capacity

In this crosscutting complementary action to the other two strategic directions, support for DMCs' efforts to establish policy, laws, and regulations, and to build institutional capacity, will continue as outlined below.

Enhancing policy and incentive frameworks. ADB's support in this area will seek to establish the basis for good environmental

governance and environmental change. In some DMCs, new environmental laws will need to be enacted. Key sector and environmental agencies' governance capacity will be strengthened through improved implementation of rules and regulations at the national, provincial, and local levels, and improved capacity of agencies through the adequate provision of human, financial, and other resources, including tools and access to knowledge. Measures to address policy and market failures for sound environmental management, to create an enabling environment for private sector innovation, and to promote and use clean technologies will be supported.

Strategic partnerships and financing, promotion of voluntary environmental standards, corporate social responsibility initiatives, and certification schemes will be pursued with the private sector. The participation of civil society, including NGOs, the judiciary, the media, and the academe in sound environmental governance will be encouraged. The establishment of environmental management information systems for use by experts, governments, the private sector, the public, and particularly people affected by environmental decisions will be supported.

Supporting the integration of environment and climate change considerations into development planning. The integration of environment and climate change considerations into regional, national, and local development plans and actions, as well as ADB's own regional and country partnership strategies, will be supported. In some cases, these efforts will be furthered through regional cooperation activities to allow the DMCs to address transboundary issues, or to share experience in tackling common challenges brought about by climate change.

Promoting an integrated approach to climate adaptation and disaster risk management. The most visible link between existing conditions and a future altered by climate change is climate-related disasters. Hence, disaster risk management (DRM) efforts will be closely aligned with other climate change adaptation activities. Integrated DRM in several countries will be promoted by building on ADB's current efforts in this area. Activities will be guided by the Disaster and Emergency Assistance Policy (DEAP), which covers natural, technological, and environmental hazards, including climate-related hazards, as well as health emergencies and country conflict situations.[30]

In view of the above, country-driven programs will be supported by promoting the mainstreaming of climate change adaptation and disaster risk reduction measures into national development plans, sector investment programs, and development projects, as well as ADB Country Partnership Strategies. To support this, innovative financing and risk-sharing approaches and associated institutional arrangements to promote adaptation and disaster risk reduction, including insurance and other disaster risk finance instruments, will be developed.

The use of tools and methods to help DMCs better address climate variability risks and to anticipate and adapt to future climatic conditions will be promoted. The affiliation of ADB with the APAN will be invaluable in mobilizing resources to enhance adaptation capacity in a synergistic and coherent manner. (See Chapter 3 for more information.) Training, awareness raising, and education will be supported to help weave climate change adaptation into the fabric of economic development in DMCs. Changing climate conditions and disaster risks will also be taken

[30] The DEAP Action Plan also covers risk identification during country programming schedules, and includes disaster management and hazard management capacity among a country's priorities.

into account in poverty reduction strategies and social development objectives, including gender equality, and measures will be carried out to enhance the resiliency of poor communities, women, and other vulnerable groups.

Strengthening country environmental safeguards capacity. ADB recognizes that countries have developed their own systems for delivering safeguards in varying degrees, and that helping strengthen such systems enhances aid effectiveness by promoting country ownership, extending development impacts, and making more efficient use of donor and DMC resources. It also promotes harmonization of development partners' safeguard requirements around a country safeguard system.

Under the Safeguard Policy Statement (2009), ADB will continue to support the strengthening and effective application of DMCs' country safeguard systems (CSS), with a focus on the capacity development of borrowers or clients. In addition, the use of CSS will be allowed for ADB projects, provided that the systems' application does not undermine the achievement of ADB's policy objectives and principles.[31] ADB will support CSS strengthening through legal analysis or equivalence assessment, as well as implementation capacity assessment of national, subnational, or sectoral institutions to identify gaps based on ADB's or international environmental safeguard policy principles. Priority action plans derived from these CSS assessments will be supported in collaboration with other development partners. ADB is seeking to establish a trust fund to mobilize external resources to support efforts in this area.

Improving compliance and enforcement of environmental laws and regulations. As part of its strategic objective of strengthening the environmental enforcement capacity of a key public institution and arm of government, ADB will continue to assist DMCs in strengthening environmental compliance and enhancing capacity in environmental adjudication, including providing continued support to AECEN. ADB understands that ensuring effective compliance to and enforcement of environmental law require that the entire enforcement chain should work. This includes enforcement officials (environment, forest, and marine), legal prosecutors, legal civil society professionals, and the judiciary. Each aspect of the enforcement chain needs to be considered separately and distinctly, while also being seen as part of an integrated chain.

Strengthening regional cooperation. In line with Strategy 2020, and supported by ADB's Regional Cooperation and Integration Strategy, focus will be on (i) regional and subregional policy dialogue and initiatives in the areas of environmental protection, managing the impact of natural disasters, clean energy and energy efficiency promotion, and governance; (ii) research on crossborder issues; (iii) DMC capacity building to respond to crossborder issues; and (iv) regional partnership building through regional exchange programs. ADB will continue to play a key role in mobilizing resources and fostering partnerships among participating countries and other development partners, such as the GEF, and nongovernment groups such as CI, TNC, the IUCN, and WWF.

Cross-cutting Directions to Meet the Climate Change Challenge

Continued poverty reduction in Asia and the Pacific will not be possible without proactive efforts to mitigate the causes of global warming and help the region to adapt to the impacts of climate change. Since development patterns need to shift to simultaneously respond to the causes and consequences of climate

[31] ADB. 2009. *Safeguard Policy Statement*. Manila.

change, as discussed above, ADB will adopt an integrated approach—addressing climate change mitigation and adaptation—facilitated by financing, knowledge generation, and partnerships in the cited priority areas for support which are (i) expanding the use of clean energy, (ii) encouraging sustainable transport and urban development, (iii) managing land use and forests for carbon sequestration, (iv) building climate resilience, and (v) strengthening related policies and institutions.

To address the climate change challenge, ADB will increasingly seek to play a major role in mobilizing and channeling the necessary resources for its DMCs through the pursuit of both innovative financing and financing for innovation. Furthermore, ADB can only succeed in helping the region in its transition to low-carbon and climate-resilient growth if it forges and maintains strong partnerships with civil society, governments, private sector entities, and other development agencies. Recognizing that knowledge and capacity development are essential in scaling up its operations on environment including climate change, efforts will be focused on generating and disseminating knowledge solutions.

ADB's role in pioneering innovative financing and resource mobilization for responses to climate change is likely to further expand, and ADB's strong fiduciary standards can help to ensure that this financing is used effectively in the region. ADB is expected to play a primary role in the provision of public financing to support policy and institutional strengthening and to help DMCs meet the capital requirements of climate-related investments. However, because public financing alone will not be adequate to the task of transforming Asian and Pacific economies, ADB will also develop instruments and look for opportunities to help mobilize and channel significantly increased flows of private capital into low-carbon and climate-resilient investments.

Efforts will also focus in putting environment knowledge solutions to work in the region. ADB will continuously develop and disseminate new knowledge, as well as stimulate regional discussion on climate change and green growth. One area of knowledge creation that will be emphasized is climate change adaptation in response to the great needs in the region to step up policy research, knowledge creation, and capacity building. Support will be extended for work on (i) climate impact and vulnerability assessments, (ii) development and dissemination of adaptation tools and methods, (iii) economic analyses of climate impacts and responses, and (iv) enhanced access to, and practical application of the growing body of knowledge on climate assessment and adaptation in DMCs.

Maintaining and building partnerships will be crucial to advance ADB's efforts to address the climate change challenge in the region. 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 address climate change. Partnerships will be maintained and further strengthened with international agencies and institutions, such as the Global Environment Facility and United Nations entities, other multilateral development banks, and bilateral agencies, as well as with NGOs and with partners at the national and local levels.

Over the medium term, ADB's environmental performance will be monitored against its new indicators and targets that will be developed, its *Results Framework* indicators and targets, and will be reported in ADB's annual *Development Effectiveness Review* report.

The environmental challenges and needs of countries in the region are many and varied. ADB will remain vigilant and responsive to the new needs and demands of its DMCs. It will continue to be a stimulus for environmental change, and remain a strong partner to its DMCs in their pursuit of green growth in Asia and the Pacific.

Appendixes

Appendix 1

Millennium Development Goal 7 (MDG 7)

Ensuring Environmental Sustainability

Targets	Indicators
Target 7a: Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources	• 7.1 Proportion of land area covered by forest • 7.2 CO2 emissions, total, per capita and per $1 GDP (PPP) • 7.3 Consumption of ozone-depleting substances • 7.4 Proportion of fish stocks within safe biological limits
Target 7b: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss	• 7.5 Proportion of total water resources used • 7.6 Proportion of terrestrial and marine areas protected • 7.7 Proportion of species threatened with extinction
Target 7c: Reduce by half the proportion of people without sustainable access to safe drinking water and basic sanitation	• 7.8 Proportion of population using an improved drinking water source • 7.9 Proportion of population using an improved sanitation facility
Target 7d: Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020	• 7.10 Proportion of urban population living in slums

Source: UNDP Millennium Development Goals. Goal 7: Ensure Environmental Sustainability.
Available: http://www.undp.org/mdg/goal7.shtml

Appendix 2
Performance of Countries in the Region in Achieving MDG 7 Targets – 2008

Early Achiever	On Track	Slow	No Progress/ Regressing
Forest Cover			
Bhutan, Cook Islands, Fiji, India, Palau, PRC, Samoa, Uzbekistan, Viet Nam	Azerbaijan, Georgia, Kiribati, Kyrgyzstan, Maldives, Micronesia, Tajikistan, Tonga, Turkmenistan, Tuvalu, Vanuatu	none	Afghanistan, Armenia, Cambodia, Bangladesh, Brunei Darussalam, Indonesia, Kazakhstan, Lao PDR, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Papua New Gunea, Philippines, Solomon Islands, Sri Lanka, Thailand, Timor-Leste
Protected Area			
Armenia, Azerbaijan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Cook Islands, Fiji, Georgia, India, Indonesia, Kazakhstan, Kiribati, Kyrgyz Republic, Lao PDR, Malaysia, Marshall Islands, Micronesia, Mongolia, Myanmar, Nepal, Pakistan, Palau, Papua New Guinea, Philippines, the PRC, Samoa, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Timor-Leste, Tonga, Tuvalu, Uzbekistan, Vanuatu, Viet Nam	Afghanistan, Turkmenistan	none	none

Early Achiever	On Track	Slow	No Progress/ Regressing
Carbon Dioxide Emissions			
Kiribati, Nepal, Philippines, Timor-Leste, Uzbekistan, Vanuatu	none	none	Afghanistan, Armenia, Azerbaijan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Cook Islands, Fiji, Georgia, India, Indonesia, Kazakhstan, Kyrgyz Republic, Lao PDR, Malaysia, Maldives Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Lao PDR, Pakistan, Palau, Papua New Guinea, the PRC, Samoa, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Tonga, Turkmenistan, Viet Nam
Ozone-depleting Substance			
Afghanistan, Armenia, Azerbaijan, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Cook Islands, Fiji, Georgia, India, Indonesia, Kazakhstan, Kiribati, Kyrgyz Republic, Lao PDR, Malaysia, Maldives, Marshall Islands, Micronesia, Myanmar, Nauru, Nepal, Pakistan, Palau, Papua New Guinea, the PRC, Philippines, Samoa, Solomon Islands, Sri Lanka, Tajikistan, Thailand, Tonga, Timor-Leste, Turkmenistan, Tuvalu, Uzbekistan, Viet Nam	none	none	Vanuatu
Safe Drinking Water			
Armenia, Georgia, Kyrgyz Republic, Malaysia, Nepal, the PRC, Sri Lanka, Thailand, Tonga, Tuvalu, Vanuatu, Viet Nam	Afghanistan, Cambodia, Kiribati, Micronesia, Mongolia, , Philippines, Timor-Leste,	Azerbaijan, Bangladesh, Bhutan, Coo Islands, India, Indonesia, Lao PDR, Maldives, Myanmar, Pakistan, Palau, Solomon Islands, Tajikistan, Turkmenistan	Kazakhstan, Marshall Islands, Papua New Guinea, Samoa, Uzbekistan
I. **Basic Sanitation**			
Cook Islands, Malaysia, Maldives, Myanmar, Sri Lanka, Samoa, Thailand, Uzbekistan, Viet Nam	Lao PDR, Palau, Philippines, Tajikistan, Timor-Leste	Afghanistan, Armenia, Bangladesh, Bhutan, Cambodia, India, Indonesia, Kazakhstan, Kiribati, Marshall Islands, Mongolia, Nepal, Pakistan, the PRC, Solomon Islands, Tuvalu, Vanuatu	Azerbaijan, Georgia, Kyrgyz Republic, Turkmenistan, Micronesia, Papua New Guinea, Tonga

Source: ESCAP/ADB/UNDP. *2010. Paths to 2015: MDG Priorities in Asia and the Pacific*. Asia-Pacific MDG Report 2010/11. Bangkok. United Nations.

Appendix 3
Projects with Environmental Sustainability as a Theme (1995–2010)

Region	Country & Loan No.	Project Title	Sector	Envi sub-theme	TOTAL ($million)
		2010			
CWRD	AFG-7307	Sungas LLC for the LPG Distribution Development	EN	EcE	8.0
CWRD	AZE-2637	Garadagh Cement Expansion and Energy Efficiency	EN	EcE	27.0
CWRD	AZE-2646	Janub Gas-Fired Power Plant	EN	EcE	232.3
SARD	BAN-2622/2623	Natural Gas Access Improvement	EN	UEI	266.0
SARD	BAN-2649	Second Crop Diversification	ANR	NRC	40.0
SARD	BAN-2695	City Region Development	MS	UEI	120.0
SARD	BAN-2696	Sustainable Rural Infrastructure Improvement	ANR	NRC	60.0
SARD	BHU-0228	Rural Renewable Energy Development	EN	EcE	21.6
SERD	CAM-2672/2673	Water Resources Management Sector Development Program (Project)	ANR	NRC	32.8
SERD	CAM-2674	Public Financial Management for Rural Development Program (Subprogram 2)	PSM	NRC	25.0
CWRD	GEO-2655	Sustainable Urban Transport Investment Program - Tranche 1	TICT	UEI	85.0
SARD	IND-2660	National Capital Region Urban Infrastructure Financing Facility - Tranche 1	MS	UEI	78.0
SARD	IND-2676	Infrastructure Development Investment Program for Tourism - Tranche 1	WS	UEI	43.4
SARD	IND-2679	Sustainable Coastal Protection and Management Investment Program - Tranche 1	ANR	EPL	51.6
SARD	IND-2681	Bihar Power System Improvement	EN	EcE	132.2
SARD	IND-2684	Assam Integrated Flood and Riverbank Erosion Risk Management Investment Program - Tranche 2	ANR	NRC	56.9
SARD	IND-2687	Himachal Pradesh Clean Energy Development Investment Program - Tranche 3	EN	EcE	208.0
SARD	IND-2725	Rajasthan Urban Sector Development Investment Program - Tranche 3	WS	UEI	63.0
SERD	INO-2619	Java-Bali Electricity Distribution Performance Improvement	EN	EcE	50.0
SERD	INO-2654	Metropolitan Sanitation Management and Health	WS	UEI	35.0
CWRD	KGZ-2668	Emergency Assistance for Recovery and Reconstruction	MS	UEI	100.0
PARD	KIR-2718	Road Rehabilitation	TICT	UEI	12.0

Region	Country & Loan No.	Project Title	Sector	Envi sub-theme	TOTAL ($million)
EARD	MON-2719	Regional Logistics	TICT	GRT	45.0
SARD	NEP-0215	Detailed Engineering Study for the Upper Seti Hydropower	EN	EcE	2.5
SARD	NEP-2650	Secondary Towns Integrated Urban Environmental Improvement	WS	UEI	60.0
SARD	NEP-2656	Kathmandu Sustainable Urban Transport	TICT	UEI	20.0
CWRD	PAK-2704	Zorlu Enerji Power	EN	EcE	36.8
CWRD	PAK-2726	Renewable Energy Development Sector Investment Program - Tranche 2	EN	EcE	200.0
PARD	PAL-2691/2692	Water Sector Improvement Program	WS	UEI	16.0
PARD	PNG-2713/2714	Town Electrification Investment Program - Tranche 1	EN	EcE	57.3
EARD	PRC-2616	Tianjin Integrated Gasification Combined Cycle Power Plant	EN	EcE	135.0
EARD	PRC-2627	Songhua River Basin Water Pollution Control and Management Project Private Sector Facility	WS	UEI	146.6
EARD	PRC-2632	Integrated Renewable Biomass Energy Development Sector	MS	GRT	66.1
EARD	PRC-2647	Wuhan Urban Environmental Improvement	MS	UEI	100.0
EARD	PRC-2648	Chongqing Urban-Rural Infrastructure Development Demonstration	MS	UEI	100.0
EARD	PRC-2657	Guangxi Southwestern Cities Development	MS	UEI	150.0
EARD	PRC-2658	Inner Mongolia Autonomous Region Environment Improvement Project (Phase II)	EN	UEI	150.0
EARD	PRC-2693	Municipal Natural Gas Infrastructure Development (Phase 2)	EN	UEI	200.0
EARD	PRC-2694	Jiangxi Sustainable Forest Ecosystem Development	ANR	NRC	40.0
EARD	PRC-2698	Jilin Wind Power	EN	EcE	240.0
EARD	PRC-2700	Risk Mitigation and Strengthening of Endangered Reservoirs in Shandong Province	ANR	NRC	29.8
EARD	PRC-2724	Railway Energy Efficiency and Safety Enhancement Investment Program - Tranche 2	TICT	EcE	100.0
RERD	REG-7318	Asia Water Fund	WS	UEI	20.0
REG	REG-7321	Clean Resources Asia Growth Fund and Renewable Energy Fund	EN	EcE	40.0
PARD	SOL-0243	Transport Sector Development Project	TICT	EcE	12.0
SARD	SRI-2710/2711	Jaffna and Kilinochchi Water Supply and Sanitation	WS	UEI	90.0
SERD	THA-2628	Solar Power	EN	EcE	70.0
SERD	THA-2678	Bangchak Solar Power	EN	GRT	134.3
CWRD	UZB-2630	Talimarjan Power	EN	EcE	350.0
CWRD	UZB-2633	Water Supply and Sanitation Services Investment Program - Tranche 2	WS	UEI	140.0
SERD	VIE-2721	Greater Mekong Subregion Biodiversity Conservation Corridor	ANR	NRC	69.0
SERD	VIE-2730	Greater Mekong Subregion Ben Luc-Long Thanh Expressway Project - Tranche 1	TICT	UEI	350.0
SERD	VIE-2731	Ho Chi Minh City Urban Mass Rapid Transit Line 2 Investment Program - Tranche 1	TICT	UEI	40.0
Subtotal					**4,958.2**

Region	Country & Loan No.	Project Title	Sector	Envi sub-theme	TOTAL ($million)
		2009			
CWRD	AFG-0167	Water Resources Development Investment Program - Tranche 1	AG	NRC	86.6
CWRD	AZE-2571	MFF-Water Supply and Sanitation Investment Program, Tranche 1	WS	UEI	75.0
SARD	BAN-2554	Urban Public and Environmental Health Sector Development Program (Program Loan)	WS	EPL	130.0
SERD	CAM-0156	Second Rural Water Supply and Sanitation Sector	WS	UEI	21.0
CWRD	GEO-2534	Municipal Services Development Project II	TICT	UEI	30.0
SARD	IND-2502	MFF – Uttarakhand Power Sector Investment Program – Project 3	EN	EcE	30.6
SARD	IND-2506	Rajasthan Urban Sector Development Investment Program – Project 2	MS	UEI	150.0
SARD	IND-2528	North Eastern Region Capital Cities Development Investment Program, Tranche 1	WS	UEI	30.0
SARD	IND-2596	Himachal Pradesh Clean Energy Development Investment Program – Tranche 2	EN	EcE	59.1
SARD	IND-7300	Public-Private Partnership for Renewable Energy Development	EN	EcE	40.0
CWRD	KGZ-2556	Issyk-Kul Sustainable Development Project	WS	UEI	30.0
SARD	LAO-0144	Sustainable Natural Resource Management and Productivity Enhancement Project	AG	NRC	20.0
SARD	NEP-0157	Second Small Towns Water Supply and Sanitation Sector	WS	UEI	45.1
SARD	NEP-2587	Energy Access and Efficiency Improvement Project	EN	NRC	65.0
CWRD	PAK-2552	MFF – Energy Efficiency Investment Program – Project 1 (formerly MFF- Sustainable Energy Investment, PFR1)	EN	EcE	60.0
EARD	PRC-2373	Guiyang Integrated Water Resources Management (Sector) Project	ANR	NRC	150.0
EARD	PRC-2526	Xinjiang Urban Transport and Environmental Improvement Project (formerly Xinjiang Urban Transport Infrastructure Development)	MS	UEI	100.0
EARD	PRC-2550	Liaoning Small Cities and Towns Development Demonstration Sector Project	MS	UEI	100.0
EARD	PRC-2572	Shaanxi Qinling Biodiversity Conservation and Demonstration Project	ANR	NRC	40.0
EARD	PRC-2574	Hebei Small Cities and Towns Development Demonstration Sector Project	MS	UEI	100.0
EARD	PRC-2600	Anhui Integrated Transport Sector Improvement Project	TICT	UEI	200.0
EARD	PRC-2601	Lanzhou Sustainable Urban Transport Project	TICT	UEI	150.0
EARD	PRC-2605	MFF Railway Energy Efficiency and Safety enhancement Investment Program – Tranche 1	TICT	UEI	300.0
EARD	PRC-2606	Shanxi Small Cities and Towns Development Demonstration Project	MS	UEI	100.0
EARD	PRC-2607	Shanxi Integrated Agricultural Development Project	ANR	NRC	100.0
EARD	PRC-2611	MFF – Guangdong Energy Efficiency and Environment Improvement Investment Program – Project 2	EN	EcE	22.1
PSOD	PRC-7291	Small Hydropower Development	EN	GRT	203.6

Region	Country & Loan No.	Project Title	Sector	Envi sub-theme	TOTAL ($million)
PSOD	PRC-7296	Municipal Waste to Energy	WS	UEI	200.0
PSOD	PRC-7297	Zhangbei Wind Power Project	EN	EcE	90.5
SARD	REG-2578/ 2579/ 2580	South Asia Tourism Infrastructure Development Project (Bangladesh, India, and Nepal)	MS	UEI	57.5
PSOD	REG- 7304	Mekong Brahmaputra Clean Development Fund, L.P.	EN	EcE	15.0
SARD	SRI-2557/ 2558	Greater Colombo Wastewater Management Project	WS	UEI	100.0
PSOD	THA-7290	BIOMASS Power Project	EN	EcE	76.8
CWRD	UZB-2564	Water Supply and Sanitation Services Investment Program - Tranche 1	WS	UEI	60.0
SERD	VIE-2517	Renewable Energy Development and Network Expansion and Rehabilitation for Remote Communities Sector Project (formerly Renewable Energy for Remote Communities Sector Project)	EN	EcE	151.0
SERD	VIE-2570	Support for the Implementation of the Poverty Reduction Program V – Subprogram 2	PSM	EPL	100.0
SERD	VIE-2610	MFF Mong Duong 1 Thermal Power Project – Tranche 2	EN	EcE	902.9
SERD	VIE-2513	Quality and Safety Enhancement of Agricultural Products and Biogas Development Project	AG	EcE	95.0
Subtotal					**4,286.6**
		2008			
CWRD	GEO-2441	Municipal Services Development	MS	UEI	40.0
SARD	IND-2410	Uttarakhand Urban Sector Development Investment Program (Subproject 1)	MS	UEI	60.0
SARD	IND-2417	Gujarat Paguthan Wind Energy Financing Facility	EN	CEET[1]	45.0
SARD	IND-2419	Mundra Ultra Mega Power Project	EN	CEET	450.0
SARD	IND-2417	Gujarat Paguthan Wind Energy Financing Facility	EN	CEET	60.0
SARD	IND-2456	Urban Water Supply and Environmental Improvement in Madhya Pradesh (Supplementary Loan)	WS	UEI	71.0
SARD	IND-2461	Himachal Pradesh Clean Energy Development Investment Program - Tranche 1	EN	CEET	150.0
SARD	IND-2476	Rural Electrification Corporation of India	MS	CEET	225.0
SARD	IND-2498	Uttarakhand Power Sector Investment Program (Subproject 2)	EN	CEET	62.4
CWRD	PAK-2411	Barani Integrated Water Resources Sector Project	MS	NRC	75.0
EARD	PRC-2407	Gansu Baiyin Urban Development Project	MS	UEI	80.0
EARD	PRC-2408	Gansu Heihe Rural Hydropower Development Investment Program (Dagushan Hydropower Project) - Subproject 2	EN	CEET	28.0
EARD	PRC-2420	Xinjiang Municipal Infrastructure and Environmental Improvement Project	MS	UEI	105.0
EARD	PRC-2422	Municipal District Energy Infrastructure Development Project	EN	CEET	200.0
EARD	PRC-2426	Guangdong Energy Efficiency and Environment Improvement Investment Program - Tranche 1	EN	CEET	35.0
EARD	PRC-2428	Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin Project	EN	NRC	100.0
EARD	PRC-2435	Inner Mongolia Wind Power	EN	CEET	24.1

[1] The 2004 project classification system was revised in 2009; cleaner production and eco-efficiency (CEET) has been replaced with eco-efficiency (EcE).

Region	Country & Loan No.	Project Title	Sector	Envi sub-theme	TOTAL ($million)
EARD	PRC-2436	Ningxia Integrated Ecosystem and Agricultural Development Project	AG	NRC	100.0
EARD	PRC-2474	Dryland Sustainable Agriculture	AG	NRC	83.0
EARD	PRC-2487	Songhua River Basin Water Pollution Control and Management	WS	UEI	200.0
EARD	PRC-2494	Qingdao Water Resources and Wetland Protection Project	MS	NRC	45.0
PARD	SAM-2440	Sanitation and Drainage (Supplementary Loan)	WS	UEI	2.8
SARD	SRI-2477	Dry Zone Urban Water and Sanitation	WS	UEI	59.8
CWRD	UZB-2492	Water Resources Management Sector Project	AG	NRC	100.0
SERD	VIE-2429	Song Bung 4 Hydropower Project	EN	CEET	196.0
SERD	VIE-2457	GMS: Sustainable Tourism Development	IN		10.0
Subtotal					**2,607.6**
		2007			
SERD	CAM-2376	Tonle Sap Lowlands Rural Development Project	MS	NRC	10.10
SARD	IND-2309	Uttaranchal Power Sector Investment Program (Subproject 1)	EN	CEET	41.920
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	MS	60.00
SERD	INO-2349	West Jakarta Water Supply Development	WS	UEI	50.00
CWRD	KGZ-2314	Southern Agriculture Area Development	AG	NRC	15.00
CWRD	PAK-2310	Sindh Coastal Community Development	MS	NRC	36.00
CWRD	PAK-2329	KESC Post-privatization Rehabilitation, Upgrade, and Expansion	EN	CEET	150.00
SERD	PHI-2311	Integrated Coastal Resources Management	AG	NRC	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	NRC	66.70
CWRD	TAJ-2313	Rural Development Project	AG	NRC	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	NRC	200.00
EARD	PRC-2260	Inner Mongolia Autonomous Region Environmental Improvement	EN	CEET	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	80.00
EARD	PRC-2239	Guangxi Nanning Urban Environmental Upgrading (Guangxi Nanning Urban Infrastructure Development)	WS	UEI	100.00

Region	Country & Loan No.	Project Title	Sector	Envi sub-theme	TOTAL ($million)
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
CWRD	PAK-2299/2300	Subproject 1: Lower Bari Doab Canal Improvement Project and the Punjab Irrigated Agriculture Project	AG	NRC	227.80
CWRD	PAK-2286/2287	Renewable Energy Development Sector Investment Program - Project I	EN	CEET	115.00
SARD	SRI-2275/2276	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	NRC	45.00
SERD	VIE-2272	Central Region Small and Medium Towns Development	WS	UEI	53.22
PSOD	PRC-7244/2255	Municipal Natural Gas Infrastructure Development (with equity investment of $25M)	EN	UEI	75.00
PSOD	IND-7245/2256	IND: Petronet LNG Limited for the Dahej Liquified Natural Gas Terminal Expansion Project	EN	CEET	150.00
PSOD	INO-7243/2251	INO:South Sumatra to West Java PHASE II Gas Pipeline Project	EN	CEET	75.00
Sub-total					**1,631.22**
		2005			
ECRD	PRC-2157	Sanjiang Plain Wetlands Protection	AG	NRC	15.00
ECRD	PRC-2175	Jilin Water Supply and Sewerage Development	WS	UEI	100.00
ECRD	PRC-2176	Fuzhou Environmental Improvement Project	WS	UEI	55.80
ECRD	PRC-2207	Henan Wastewater Management and Water Supply Project	WS	UEI	100.00
MKRD	VIE-2223	Central Region Water Resources	AG	NRC	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			
ECRD	AZE-2119/ 2120	Urban Water Supply and Sanitation Project	WS	UEI	30.00
ECRD	PRC-2112	Liaoning Environment Improvement Project	EN	CEET	70.00
ECRD	PRC- 2146	Coalmine Methane Development Project	EN	CEET	117.40
ECRD	PRC- 2082	Fujian Soil Conservation and Rural Development II	MS	NRC	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

Region	Country & Loan No.	Project Title	Sector	Envi sub-theme	TOTAL ($million)
Sub-total					**450.80**
		2003			
ECRD	AZE-2068	Flood Mitigation	AG	NRC	22.00
ECRD	PRC- 2032	Gansu Clean Energy Development Project	EN	CEET	35.00
ECRD	PRC-1996	Wuhan Wastewater Management	WS	UEI	83.00
PARD	FIJ- 2055	Suva Nausori Water Supply and Sanitation	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	North East Coastal Community Development	AG	NRC	20.00
Sub-total					**305.00**
		2002			
ECRD	PRC-1924	Efficient Utilization of Agricultural Wastes Project	MS	CEET	33.12
ECRD	PRC-1919	Songhua River Flood Management Sector	AG	UEI	150.00
ECRD	PRC-1985	Hebei Province Wastewater Management	WS	UEI	82.36
MKRD	CAM-1939	Tonle Sap Environmental Management	AG	NRC	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	NRC	42.17
SARD	NEP-1966	Urban and Environmental Improvement Project	MS	UEI	30.00
SERD	INO-1962	Coral Reef Rehabilitation and Management Project	AG	NRC	33.00
Sub-total					**454.16**
		2001			
ECRD	PRC-1890	Acid Rain Control and Environmental Improvement	MS	CEET	147.00
ECRD	PRC-1835	Yellow River Flood Management Sector Project	AG	UEI	150.00
ECRD	UZB-1833	Ak Altin Agricultural Development Project	AG	NRC	36.00
MKRD	LAO-1867	Environment and Social Program	MS	EPL	20.00
PARD	COO-1832	Waste Management Project	WS	UEI	2.20
Sub-total					**355.20**
		2000			
ECRD	PRC-1818	Wind Power Development	EN	CEET	58.00
ECRD	PRC1797	Tianjin Wastewater Treatment and Water Resources Protection	MS	UEI	130.00
MKRD	VIE-1781	Tea and Fruit Development	AG	NRC	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	NRC	12.00
SARD	SRI-1744	Forest Resources Management Sector	AG	NRC	27.00
SARD	SRI-1757	Water Resources Management	AG	NRC	19.70

Region	Country & Loan No.	Project Title	Sector	Envi sub-theme	TOTAL ($million)
SERD	INO-1770	Marine and Coastal Resources Management	AG	NRC	50.00
SERD	PHI-1745/ 1746	Pasig River Environmental Management and Rehabilitation Program	AG	NRC	175.00
Sub-total					**897.24**
		1999			
ECRD	PRC-1715	Shanxi Environment Improvement	EN	CEET	102.00
ECRD	PRC-1692	Suzhou Creek Rehabilitation	WS	NRC	300.00
MKRD	LAO-1688	Shifting Cultivation Stabilization	MS	NRC	5.60
MKRD	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	NRC	7.80
SARD	SRI-1716	Coastal Resource Management	AG	NRC	40.00
Sub-total					**917.65**
		1998			
ECRD	PRC-1636	Fuzhou Water Supply and Wastewater Treatment	WS	UEI	102.00
MKRD	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	NRC	37.00
SARD	IND-1647	Rajasthan Urban Infrastructure Development	MS	UEI	250.00
SARD	SRI-1639	Tea Development	AG	NRC	35.00
SERD	INO-1605	Central Sulawesi Integrated Area Development and Conservation	AG	NRC	32.00
SERD	INO-1613	Coral Reef Rehabilitation and Management	AG	NRC	7.00
SERD	PHI-1663/ 1664/ 1665	Metro Manila Air Quality Improvement Sector Development Program	MS	UEI	296.00
Sub-total					**849.24**
		1997			
ECRD	PRC-1543	Xi'an-Xianyang Tongchuan Environment Improvement	EN	CEET	156.00
MKRD	LAO-1575	Secondary Towns Urban Development	WS	UEI	27.00
MKRD	VIE-1515	Forestry Sector	AG	NRC	33.00
MKRD	VIE-1514	2nd Provincial Towns Water Supply	WS	UEI	69.00
SARD	PAK-1539	Korangi Wastewater Management - verified in RRP	WS	UEI	70.00
SARD	SRI-1545	Upper Watershed Management	AG	NRC	16.60
SERD	INO-1570/ 1571	Coastal Community Development and Fisheries Resources Mgmt	AG	NRC	41.00
SERD	PHI-1562/ 1563	Fisheries Resource Management	AG	NRC	35.22

Region	Country & Loan No.	Project Title	Sector	Envi sub-theme	TOTAL ($million)
Sub-total					**447.82**
		1996			
ECRD	PRC-1436	2nd Industrial Energy Efficiency and Environment Improvement	EN	CEET	178.00
ECRD	PRC-1491	Anhui Environmental Improvement-Industry	EN	CEET	112.00
ECRD	PRC-1490	Anhui Environmental Improvement - Water	WS	UEI	28.00
ECRD	PRC-1498	North China Marine Culture and Coastal Resources Management	AG	NRC	70.00
MKRD	CAM-1468	Phnom Pehn Urban Water Supply and Drainage	WS	UEI	20.00
SARD	BAN-1486	Forestry Sector	AG	NRC	50.00
SARD	IND-1465	Renewable Energy Development	EN	CEET	100.00
SARD	NEP-1451	2nd Tourism Infrastructure Development	IN	UEI	17.20
SERD	INO-1449	BAPEDAL Regional Network	AG	EPL	45.00
SERD	INO-1475/ 1476	Segara Anakan Conservation and Development	AG	NRC	45.60
SERD	INO-1469	Integrated Pest Management for Smallholder Estate Crops	AG	NRC	44.00
SERD	MAL-1500	Klang River Environmental Improvement and Flood Mitigation	AG	NRC	26.30
Sub-total					**736.10**
		1995			
ECRD	PRC-1372	Hainan Agriculture and Natural Resource Development	AG	NRC	53.00
MKRD	LAO-1362	Vientiane Integrated Urban Development	MS	UEI	20.00
MKRD	THA-1410	Samut Prakarn Wastewater Management	WS	UEI	150.00
MKRD	VIE-1361	Provincial Towns Water Supply and Sanitation	WS	UEI	66.00
SARD	BAN-1353	Coastal Greenbelt	AG	NRC	23.40
SARD	PAK-1413	National Drainage Sector	AG	NRC	140.00
SARD	PAK-1403	Forestry Sector	AG	NRC	42.60
SARD	SRI-1402	Plantation Reform	AG	NRC	60.00
SERD	INO-1351	Sulawesi Rainfed Agriculture Development	AG	NRC	30.36
Sub-total					**585.36**
		Grand Total 1995-2010			**11,940.40**

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: ANR – agriculture and natural resources; IN – industry and trade; EN – energy; MS – multisector; PSM – public sector management; TICT – transport and information and communication technology ; WS – water supply and other municipal infrastructure and services

ES Subtheme: EcE – eco-efficiency; NRC- natural resource conservation, UEI- urban environmental improvement, CEET- cleaner or energy-efficient technology promotion, GRT- global and regional transboundary concerns, EPL - environmental policy and legislation

Appendix 4
Technical Assistance and Grants with Environmental Sustainability as a Theme (1995-2010)

TA No.	Ctry	Title	Type	Total Amount (US$)
		2010		
7641	BAN	Strengthening Regional Planning and Governance (formerly Strengthening management of City Regions)	CDTA	675,000
7642	BAN	Energy Efficiency Improvement (formerly Solar Powered Street Lights and Energy Efficient Water Pumps)	CDTA	1,500,000
7559	GEO	Regional Power Transmission Enhancement Project	PPTA	350,000
7551	GEO	Developing a Geospatial Urban Water supply and Sanitation Utility Management System	CDTA	800,000
7492	GEO	Developing an Urban Water Supply and Sanitation Sector Strategy and Regulatory Framework for Georgia	PATA	862,500
7749	IND	Capacity Development for Project Management of Infrastructure Development for Rural Livelihood Enhancement – amount TBD	S-CDTA	1,000,000
7661	IND	Himachal Pradesh Clean Energy Evacuation	PPTA	500,000
7768	INO	Institutional Strengthening for the Water Resources Sector	PATA	500,000
7583	INO	Geothermal Power Development Project	PPTA	1,500,000
7562	INO	Capacity Development for Metropolitan Sanitation Management and Health Project	CDTA	1,500,000
7509	LAO	Capacity Enhancement for coping with Climate Change	CDTA	3,100,000
7567	LAO	Pakse Urban Environmental Improvement Project	PPTA	700,000
7619	MON	Updating the Energy Sector Development Plan	PATA	1,000,000
7502	MON	Ulaanbaatar Low Carbon Energy Supply Project Using a Public-Private Partnership Model	PATA	1,500,000
7591	MON	Ulaanbaatar Water and Sanitation Services and Planning Improvement	PATA	600,000
7590	NEP	Preparing Hydropower Development for Energy Crisis	PPTA	2,000,000
7628	NEP	Energy Sector Capacity Building	CDTA	600,000
7504	NEP	Increasing Access to Energy in Rural Nepal	CDTA	933,000
7597	NEP	Capacity Building for Waste Management	CDTA	500,000
7716	PHI	Decentralized Framework for Sustainable Natural Resources management and for Operations and Maintenance	S-CDTA	1,300,000

TA No.	Ctry	Title	Type	Total Amount (US$)
7569	PHI	Three Wind Farm Projects in Luzon	PPTA	630,000
7683	PHI	Urban Water supply and Sanitation Project	S-PPTA	2,000,000
7658	PRC	Effective Reservoir Utilization for Integrated Water Resources Management	CDTA	300,000
7623	PRC	Ningxia Dryland Farming and Water Conservation Demonstration Project	PPTA	600,000
7701	PRC	Anhui Chao Lake Environmental Protection Project	PPTA	700,000
7732	PRC	Shaanxi Weinan Luyang Integrated Saline and Alkaline Land Management Project	PPTA	600,000
7640	PRC	Promoting Energy Conservation in Tianjin	CDTA	400,000
7721	PRC	Developing Smart Grid for Efficient Utilization of Renewable Energy in the PRC	S-CDTA	900,000
7730	PRC	Heilongjiang Energy Efficient and Urban Environment Improvement Project	PPTA	550,000
7736	PRC	Shanxi Energy Efficiency and Urban Environment Improvement Project	PPTA	550,000
7643	PRC	Renewable Energy Development in Qinghai	CDTA	700,000
7564	PRC	Innovative Financing Mechanisms for Energy Efficiency and Emission Reduction in Small and Medium-Size	PATA	900,000
7589	PRC	Study on Beijing Green Finance Development Strategy	PATA	500,000
7607	PRC	Hubei Huangxhi Urban Pollution Control and Environmental Management Project	PPTA	600,000
7620	PRC	Guangxi Baise Integrated Urban Environment Rehabilitation Project	PPTA	700,000
7687	PRC	Strengthening Capacity to Address Climate Change for Small and Medium-Sized City Development	S-PATA	500,000
7568	PRC	Supporting Reforms in Taxation and Budget Management	PATA	1,200,000
7617	PRC	Capacity Building for ICT-Based Industrial Waste Management	CDTA	450,000
7595	PRC	Jiangxi Fuzhou Urban Integrated Infrastructure Improvement	PPTA	600,000
7534	REG	Strengthening Carbon Financing for Regional Grassland management in Northeast Asia	R-CDTA	1,400,000
7753	REG	Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific (Phase II)	R-PATA	15,050,000
7558	REG	Central Asia Regional Economic Cooperation: Power Sector Regional Master Plan	R-RDTA	2,000,000
7548	REG	Improving the Implementation of Environmental Safeguards in Central and West Asia	R-CDTA	800,000
7510	REG	Needs Assessment and Development of the Solar Energy Program	R-CDTA	1,000,000
7613	REG	Knowledge Platform Development for the Asia Solar Energy Initiative	R-CDTA	2,000,000
7679	REG	Promoting Renewable Energy, Clean Fuels, and Energy Efficiency in the Greater Mekong Subregion	R-CDTA	1,000,000
7575	REG	Determining the Potential for Carbon Capture and Storage in Southeast Asia	R-CDTA	900,000
7535	REG	Strengthening the Asia Pacific Adaptation Network	R-RDTA	350,000
7532	REG	Water and Adaptation Intervention in Central and West Asia	R-CDTA	1,000,000
7645	REG	Enabling Climate Change Responses in Asia and the Pacific – Strengthening Planning Capacity for Low	R-RDTA	1,420,000
7506	REG	Project Preparation Support for the Cities Development Initiative for Asia	R-RDTA	2,000,000
7735	REG	Building Capacity for Environmental Prosecution, Adjudication , Dispute Resolution, Compliance and En	R-CDTA	500,000
7566	REG	Strengthening and Use of Country Safeguard Systems	R-CDTA	5,000,000
7635	REG	Identifying Solid Waste Management Key Development Challenges and Initial Project Pipeline	R-PATA	225,000

TA No.	Ctry	Title	Type	Total Amount (US$)
7599	TAJ	Climate Resiliency for Natural Resources Investments	R-CDTA	750,000
7615	THA	Bangchak Solar Power Project	R-CDTA	400,000
7629	VIE	Capacity Building for River Basin Water Resources Planning	R-CDTA	580,000
228	BHU	Rural Renewable Energy Development	Grant	21,590,000
220	CAM	Water Resources Management Sector Development Program*	Grant	2,800,000
221	CAM	Public Financial Management for Rural Development Program-Subprogram 2*	Grant	10,000,000
222	CAM	Public Financial Management for Rural Development Program-Subprogram 2*	Grant	5,000,000
241	CAM	Greater Mekong Subregion Biodiversity Conservation Corridors	Grant	19,000,000
198	INO	Java-Bali Electricity Distribution Performance Improvement	Grant	1,000,000
217	KGZ	Emergency Assistance for Recovery and Reconstruction	Grant	51,500,000
242	LAO	Greater Mekong Subregion Biodiversity Conservation Corridors	Grant	20,000,000
240	MON	Regional Logistics Development	Grant	5,000,000
212	NEP	Kathmandu Sustainable Urban Transport	Grant	12,500,000
215	NEP	Detailed Engineering Study for the Upper Seti Hydropower	Grant	2,500,000
214	PAK	National Flood Emergency Response	Grant	3,000,000
196	PRC	Tianjin Integrated Gasification Combined Cycle Power Plant*	Grant	5,000,000
202	PRC	Integrated Renewable Biomass Energy Development Sector	Grant	3,000,000
203	PRC	Integrated Renewable Biomass Energy Development Sector	Grant	9,200,000
229	PRC	Jiangxi Sustainable Forest Ecosystem Development*	Grant	1,000,000
9148	RMI	Improved Energy Supply for Poor Households	Grant	1,760,000
243	SOL	Transport Sector Development	Grant	12,000,000
201	THA	Solar Power	Grant	2,000,000
		2009		
7242	BAN	Power System Efficiency Improvement Project	PPTA	1,200,000
7273	BAN	Supporting Implementation of the Bangladesh Climate Change Strategy and Action Plan (Subproject 1)	CDTA	680,000
7354	BAN	Capacity Development of Urban Public and Environmental Health	PPTA	500,000
7415	BAN	Greater Dhaka Sustainable Urban Transport Corridor	PPTA	1,000,000
7318	BAN	Rural Renewable Energy Development Project	PPTA	900,000
7296	GEO	Georgia Sustainable Urban Transport Project	PPTA	1,100,000
4573	IND	Water Users Association Empowerment for Improved Irrigation Management in Chattisgarh (Supplementary)	ADTA	700,000
7250	IND	Study on Cross-Sectoral Implications of Biofuel Production and Use	PATA	500,000
7256	IND	Strengthening Implementation of Social and Environmental Safeguard Requirements in Projects in India	CDTA	225,000
7327	IND	Kolkata Environmental Improvement Project Phase II	PPTA	400,000
7378	IND	Capacity Development of the Assam Power Sector Utilities	CDTA	1,000,000
7392	IND	Advanced Project Preparedness for Poverty Reduction – Support for the Jawaharlal Nehru National Urban Renewal Mission (Phase (II)	CDTA	2,000,000
7413	IND	Multistate and Multisector Project Management Capacity Building	CDTA	750,000

TA No.	Ctry	Title	Type	Total Amount (US$)
7417	IND	Support for the National Action Plan on Climate Change	PATA	750,000
7418	IND	Integrated Water Resources Management and Sustainable Water Service Delivery in Karnataka	CDTA	700,000
7364	INO	Flood Management in Selected river Basins Project (Phase II)	PPTA	1,000,000
7228	KGZ	Issy-Kul Sustainable Development Project	PPTA	800,000
7310	KGZ	Growth Diagnostic and Impact Evaluation in the Kyrgyz Republic	PATA	225,000
7359	KIR	Tarawa Sanitation Improvement Project	PPTA	850,000
7013	LAO	Updating the National Water Policy and Strategy (Supplementary)	PATA	300,000
7227	LAO	Small and Mini Hydroelectric Development Project	PPTA	1,000,000
7241	LAO	Sustainable Natural Resource Management and Productivity Enhancement Project	CDTA	700,000
7362	LAO	Northern Rural Infrastructure Development Project	PPTA	800,000
7365	MON	Capacity Building Program on Clean Development Mechanism	CDTA	500,000
7462	MON	Ulaanbaatar Clean Air	PATA	500,000
7298	NEP	High Mountain Agribusiness and Livelihood Improvement (HIMALI) Project	PPTA	730,000
7355	NEP	Institutional Strengthening of Municipalities	CDTA	900,000
7173	NEP	Strengthening Capacity for Managing Climate Change and the Environment (Supplementary)	CDTA	620,000
7321	PAK	Punjab Cities Improvement Investment Program	PPTA	1,400,000
7258	PHI	Agusan River Basin Integrated Water Resources Management Project	PPTA	1,180,000
7109	PHI	Integrated Natural resources and Environmental Management Sector Development Program (Supplementary)	PPTA	291,000
4813	PRC	Strengthening Flood Management Sustainability in Hunan Province (Supplementary)	CDTA	600,000
4939	PRC	Integrated Renewable Biomass Energy Development (Supplementary)	PPTA	210,000
7040	PRC	Silk Road Ecosystem Restoration Project (Supplementary)	PPTA	335,000
7225	PRC	Improving Corporate Governance and Enhancing Institutional Capacity of Environmental and Social Management	CDTA	700,000
7261	PRC	Strategy for Drought Management	PATA	820,000
7270	PRC	Risk Mitigation and Strengthening of Endangered Reservoirs in Shandong Province	PPTA	500,000
7286	PRC	Carbon Dioxide Capture and Storage Demonstration-Strategic Analysis and Capacity Strengthening	CDTA	1,250,000
7294	PRC	Municipal Waste to Energy Project	CDTA	653,000
7295	PRC	Energy Efficiency and Emission Reduction Project in Shandong Province	PPTA	700,000
7306	PRC	Policy Study on Government Public Expenditure in Agricultural Production Project	PATA	1,000,000
7308	PRC	Improving Road Safety through the Application of Intelligent Transport Systems	PATA	500,000
7311	PRC	Agricultural Infrastructure Comprehensive Development Project	PPTA	800,000
7312	PRC	Hai River Estuary Pollution Control and Ecosystem Rehabilitation Project	PPTA	700,000
7328	PRC	Recycling Waste Coal for Power Generation	PATA	500,000
7339	PRC	Hunan Xiangjiang Inland Waterway Project	PPTA	135,000
7339	PRC	Hunan Xiangjiang Inland Waterway Project (Supplementary)	PPTA	1,000,000
7386	PRC	Strengthening Enforcement of Environmental Laws and Regulations	PATA	300,000
7403	PRC	Institutional and Capacity Development	CDTA	600,000

TA No.	Ctry	Title	Type	Total Amount (US$)
7439	PRC	Management and Policy Support to Combat Land Degradation	CDTA	2,927,455
7440	PRC	Xi'an Urban Road network Improvement Project	PPTA	1,000,000
7442	PRC	Developing a Low-Carbon Economy in Yunnan Province	CDTA	400,000
7443	PRC	Energy Efficiency Improvements in Inner Mongolia Autonomous Region	CDTA	500,000
7402	PRC	Concentrating Solar Thermal Power Development	CDTA	1,000,000
7108	PRC	Chongqing Urban-Rural Infrastructure Development Demonstration Project	PPTA	100,000
7484	PRC	Country Environmental Analysis	PATA	225,000
7301	SAM	Water Supply, Sanitation and Drainage Project	PATA	1,100,000
7320	SRI	Supporting Capacity Development for Wastewater Management Services in Colombo	CDTA	650,000
7363	SRI	Sustainable Power Sector Support II Project	PPTA	800,000
7326	SRI	Strengthening Capacity for Climate Change Adaptation	CDTA	700,000
7444	THA	Lamthakong Wind Farm Development Project	PPTA	160,000
7445	THA	Chaiyapun Wind Farm Development Project	PPTA	160,000
7240	UZB	Water Supply and Sanitation Services	PPTA	1,000,000
7251	VIE	Strengthening Project management and Developing Strategies and Options for Biogas Development Program Expansion	PATA	1,500,000
7262	VIE	Capacity Building for Renewable Energy Development	CDTA	2,500,000
7377	VIE	Climate Change Impact and Adaptation Study in the Mekong Delta	CDTA	1,300,000
6438	REG	Implementation of the Technical Support Facility under the Carbon Market Initiative (supplementary)	R-PPTA	1,000,000
6524	REG	Climate Impacts and Responses: A Multimedia Campaign Project	R-CDTA	450,000
7243	REG	Implementation of Asian City Transport – Promoting Sustainable Urban Transport in Asia Project	R-PPTA	2,800,000
7274	REG	Enabling Climate Change Interventions in Central and West Asia	R-CDTA	5,000,000
7276	REG	Supporting Investments in Water-Related Disaster Management	R-CDTA	2,000,000
7278	REG	Carbon Dioxide Capture and Storage Demonstration in Developing Countries – Analysis of Key Policy Issues and Barriers	R-PATA	350,000
7285	REG	Preparation of the 2010 Asian Environment Outlook	R-RDTA	500,000
7302	REG	Capturing Economic Benefits from Ecosystem Services	R-RDTA	600,000
7304	REG	Establishment of a Market Place for Transfer of Low Carbon Technologies to Asia and Pacific	R-PPTA	225,000
7315	REG	Sustainable Fuel Partnership Study: Exploring an Innovative market Scheme to Advance Sustainable Transport and Fuel Security	R-RDTA	1,250,000
7329	REG	Promoting Access to Renewable Energy in the Pacific	R-CDTA	3,000,000
7394	REG	Strengthening the Capacity of Pacific Developing Member Countries to Respond to Climate Change (Phase 1)	R-CDTA	3,465,000
7395	REG	Improving the Health Status of Vulnerable Communities Threatened by Legacy or Artisanal Pollution	R-PATA	900,000
7407	REG	Managing Climate Impacts on Health in Water and Agriculture Sectors and Disaster Risk Reduction	R-PATA	140,000
7450	REG	Project Preparation Support for Livable Cities in Asia	R-RDTA	2,000,000

TA No.	Ctry	Title	Type	Total Amount (US$)
7459	REG	Greater Mekong Subregion Biodiversity Conservation Corridors	R-PPTA	1,000,000
7473	REG	Solar Energy Development in South Asia – Opportunity Assessment (Subproject 1)	R-CDTA	1,000,000
7485	REG	Effective Deployment of Distributed Small Wind Power systems in Asian Rural Areas	R-RDTA	3,870,000
6291	REG	Rolling Out air Quality Management in Asia (Supplementary)	R-RDTA	655,000
6325	REG	Promoting Effective Water Management Policies and Practices – Phase 5 (3rd Supplementary)	R-CDTA	583,000
6293	REG	Managing the Cities in Asia (Supplementary)	R-RDTA	530,000
6443	REG	Energy for All Initiative (Supplementary)	R-RDTA	500,000
6498	REG	Knowledge and Innovation Support for ADB's Water Financing Program (Supplementary)	R-CDTA	1,500,000
7465	REG	Economics of Climate Change and Low Carbon Growth Strategies in Northeast Asia	R-RDTA	1,800,000
7474	REG	Strengthening of Judicial Capacity to Adjudicate Upon Environmental laws and Regulations	R-CDTA	225,000
167	AFG	Water Resources Development Investment Program – Tranche 1	Grant	86,600,000
156	CAM	Second Rural Water Supply and Sanitation Sector	Grant	21,000,000
163	KGZ	Issyk-Kul Sustainable Development	Grant	13,500,000
157	NEP	Second Small Towns Water Supply and Sanitation Sector	Grant	45,100,000
179	REG	South Asia Tourism Infrastructure Development	Grant	12,750,000
182	NEP	Energy Access and Efficiency Improvement	Grant	4,500,000
109	PRC	Capacity Building for Energy Efficiency Implementation (Supplementary)	Grant	1,200,000
159	PRC	Liaoning Small Cities and Towns Development Demonstration Sector	Grant	250,000
171	PRC	Hebei Small Cities and Towns Development Demonstration Sector	Grant	250,000
190	PRC	Shanxi Small Cities and Towns Development Demonstration Sector Project – Support for Water/Wastewater Service Implementing Agencies and Companies	Grant	250,000
0188/ 0189	PRC	Climate Change Adaptation through Groundwater Management /Women's Economic Empowerment Project	Grant	695,000
194	PRC	Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin	Grant	2,980,000
165	SAM	Earthquake and Tsunami Disaster Response	Grant	1,000,000
78	SOL	Emergency Assistance (Supplementary)	Grant	4,040,000
193	SRI	North East Community Restoration and Development II (Supplementary)	Grant	7,280,000
		2008		
7197	BAN	Strengthening the Resilience of the Water Sector in Khulna to Climate Change	ADTA	600,000
7148	IND	Promoting Inclusive Urban Development in Indian Cities	ADTA	1,000,000
7158	NEP	Strengthening Capacity for Managing Climate Change and the Environment	ADTA	500,000
7083	PRC	Urban Wastewater Reuse and Sludge Utilization Policy Study	ADTA	1,000,000
7127	PRC	River Basin Water Resources Allocation and Management Policy	ADTA	750,000
7146	PRC	Capacity Strengthening in Planning and Implementation of Integrated Gasification Combined Cycle Plant	ADTA	200,000
7174	PRC	Transport Efficiency through Logistics Development Policy Study	ADTA	500,000
7191	PRC	Design of the National Sulfur Dioxide Emission Trading System	ADTA	500,000
7202	PRC	Utilization of Foreign Capital to Promote Energy Conservation and Energy-Efficient Power Generation Scheduling	ADTA	1,500,000

TA No.	Ctry	Title	Type	Total Amount (US$)
7212	PRC	China Clean Development Mechanism Fund Capacity Development	ADTA	800,000
7217	PRC	Preparing National Guidelines for Eco-Compensation in River Basins and a Framework for Soil Pollution Management	ADTA	800,000
7219	PRC	Enabling the Protection of Jiaozhou Bay Water Quality and Wetland Ecosystem	ADTA	750,000
7194	THA	Mainstreaming Energy Efficiency Measures in Thai Municipalities	ADTA	1,000,000
7099	IND	Integrated Renewable Energy Development	PPTA	1,400,000
7106	IND	Bihar Urban Development	PPTA	1,000,000
7132	IND	Integrated Flood and River Erosion Management - Arunachal Pradesh	PPTA	900,000
7136	IND	Integrated Flood and Riverbank Erosion Risk Management - Assam (Phase 2): Processing and Institutional Strengthening	PPTA	900,000
7221	IND	Preparing Nonsovereign Urban Infrastructure Projects	PPTA	1,250,000
7176	NEP	Electricity Connectivity and Energy Efficiency	PPTA	150,000
7182	NEP	Secondary Towns Integrated Urban Environmental Improvement	PPTA	850,000
2060	PAK	Sustainable Energy Efficiency Development Program	PPTA	600,000
7109	PHI	Integrated Natural Resources and Environmental Management Sector Development Program	PPTA	850,000
7160	PRC	Guangxi Border Cities Development	PPTA	800,000
7177	PRC	Wuhan Urban Environmental Improvement	PPTA	700,000
7179	PRC	Jiangxi Sustainable Forest Ecosystem Development	PPTA	700,000
7121	SAM	Afulilo Environmental Enhancement	PPTA	1,200,000
7140	SRI	Assessing Colombo Municipality Wastewater Systems	PPTA	150,000
7061	UZB	Water Resources Management Sector	PPTA	1,200,000
7151	VIE	Hai Phong Water Supply	PPTA	1,000,000
6479	REG	Addressing Climate Change in the Asia and Pacific Region	RETA	1,250,000
6510	REG	Capturing and Transferring Air Quality Management Knowledge in Asia	RETA	500,000
6443	REG	Energy for All Initiative	RETA	2,300,000
6442	REG	Implementation of the Seed Capital Assistance Facility	RETA	4,200,000
6457	REG	Improving the Implementation of Environmental Safeguards for ADB Projects in Central and West Asia	RETA	150,000
6498	REG	Knowledge and Innovation Support for ADB's Water Financing Program	RETA	2,000,000
6470	REG	Managing Water in Asia's River Basins: Charting Progress and Facilitating Investment	RETA	2,000,000
6485	REG	Promoting Energy Efficiency in the Pacific	RETA	1,200,000
6496	REG	Regional Partnerships for Climate Change Adaptation and Disaster Preparedness	RETA	1,000,000
6471	REG	Strengthening Coastal and Marine Resources Management in the Coral Triangle of the Pacific (Phase 1)	RETA	850,000
6446	REG	Strengthening Sound Environmental Management in the Brunei Darussalam, Indonesia, Malaysia, and Philippines East ASEAN Growth Area	RETA	2,000,000
112	KGZ	Southern Agriculture Area Development*	Grants	2,500,000
9117	LAO	Alternative Livelihood for Upland Ethnic Groups in Houaphanh Province	Grants	1,820,000
117	LAO	Greater Mekong Subregion Sustainable Tourism Development*	Grants	10,000,000

TA No.	Ctry	Title	Type	Total Amount (US$)
9121	MON	Community-Based Local Road Upgrading and Maintenance in the Western Region of Mongolia	Grants	2,000,000
9124	MON	Water Point and Extension Station Establishment for Poor Herding Families	Grants	2,000,000
9125	MON	Poverty Reduction Through Community-Based Natural Resource Management	Grants	2,000,000
9127	MON	Energy Conservation and Emissions Reduction from Poor Households	Grants	2,000,000
	PRC	Capacity Building for Energy Efficiency Implementation*	Grants	800,000
113	PRC	Ningxia Integrated Ecosystem and Agricultural Development	Grants	4,545,000
128	PRC	Dryland Sustainable Agriculture Project*	Grants	350,000
114	SAM	Sanitation and Drainage	Grants	2,220,000
129	SRI	Dry Zone Urban Water and Sanitation*	Grants	25,200,000
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
7016	INO	Capacity Building in Water Resources in a Decentralized Environment	ADTA	850,000
7013	LAO	Updating the National Water Policy and Strategy	ADTA	1,000,000
4987	PRC	National Strategies For Environmental Management And Energy Conservation	ADTA	900,000
4935	PRC	Gansu Rural Clean Energy Development	ADTA	800,000
7006	PRC	Development Of Biomass Power Generation In Rural Areas	ADTA	600,000
4948	PRC	Promoting Resource Conservation And Energy Efficiency	ADTA	400,000
4975	PRC	Utilization Of Renewable Shallow-Ground Geo-Energy	ADTA	150,000
7002	PRC	Urban Wastewater And Solid Waste Management For Small Cities And Towns	ADTA	1,000,000
4967	PRC	Policy Study On Market-Based Instruments For Water Pollution Control	ADTA	500,000
4991	PRC	Transport Information System	ADTA	400,000
7027	PRC	Strengthening the Capacity of the Sanmenxia Municipality Government in Strategic Planning and Management*	ADTA	400,000
7049	PRC	Implementing the National Flood Management Strategy	ADTA	500,000
7021	PRC	Capacity Building for Integrated Ecosystem Management in Ningxia Hui Autonomous Region	ADTA	600,000
4944	SOL	Strengthening Disaster Recovery Planning And Coordination	ADTA	800,000
4966	VIE	Capacity Building On Environmental Management To The Power Sector	ADTA	600,000
7024	VIE	Supporting the Energy Efficiency Program Implementation Project	ADTA	925,000
7041	BAN	Participatory Small-Scale Water Resources Project	PPTA	600,000
7022	COO	Infrastructure Development Project	PPTA	700,000
7014	IND	Inclusive Tourism Infrastructure Development	PPTA	1,000,000
7028	KAZ	Second Water Resources Management and Land Improvement	PPTA	600,000
4924	KGZ	Agricultural Land Improvement	PPTA	700,000
4921	LAO	Cumulative Impact Assessment For The Nam Ngum 3 Hydropower Project	PPTA	983,000
4972	NEP	Improved Water Quality, Sanitation, And Service Delivery In Emerging Towns Sector Development Program	PPTA	720,000
4939	PRC	Integrated Renewable Biomass Energy Development	PPTA	650,000

TA No.	Ctry	Title	Type	Total Amount (US$)
4951	PRC	Inner Mongolia Autonomous Region Environment Improvement (Phase Ii)	PPTA	800,000
4959	PRC	Small Cities And Towns Development Demonstration Sector Projects	PPTA	1,700,000
4960	PRC	Guangxi Wouzhou Urban Development	PPTA	500,000
4930	PRC	Xinjiang Urban Transport And Environmental Improvement	PPTA	700,000
4971	PRC	Songhua River Basin Water Pollution Control And Management Project	PPTA	1,300,000
4995	PRC	Lanzhou Sustainable Urban Transport Project	PPTA	800,000
4819	PRC	Energy Conservation and Resource Management (Supplementary)	PPTA	320,000
7015	PRC	Jiangsu Yancheng Wetlands Protection Project	PPTA	650,000
7040	PRC	Silk Road Ecosystem Restoration Project	PPTA	800,000
4596	TAJ	Power Rehabilitation, Phase II	PPTA	11,000
7041	BAN	Participatory Small-Scale Water Resources Project	PPTA	600,000
7022	COO	Infrastructure Development Project	PPTA	700,000
6439	REG	Twelfth Agriculture and Natural Resources Research at International Agricultural Research Centers	RETA	2,000,000
6427	REG	A Regional Review of the Economics of Climate Change in Southeast Asia	RETA	904,000
6384	REG	Establishing Renewable Energy, Energy Efficiency and Greenhouse Gas Mitigation Investment Funds	RETA	150,000
6144	REG	Better Air Quality Management In Asia (Supplementary)	RETA	75,000
6285	REG	Strengthening Country Safeguard Systems (Supplementary)	RETA	100,000
6285	REG	Strengthening Country Safeguard Systems (2nd Supplementary)	RETA	70,000
6420	REG	Promoting Climate Change Adaptation in Asia and the Pacific	RETA	3,600,000
6422	REG	Mainstreaming Environment for Poverty Reduction	RETA	2,850,000
6419	REG	Promoting Environmental Compliance and Enforcement in Asia	RETA	150,000
6416	REG	A Development Framework for Sustainable Urban Transport	RETA	500,000
6387	REG	Energy Sector Strategy and Development 2007	RETA	400,000
6438	REG	Implementation of the Technical Support Facility under the Carbon Market Initiative	RETA	4,040,000
6392	REG	Supporting the Implementation of the Energy Efficiency Initiative in Developing Member Countries	RETA	2,300,000
6293	REG	Managing the Cities in Asia (Supplementary)	RETA	5,000,000
6421	REG	Sustainable Urban Development In Asia	RETA	800,000
6441	REG	Efficiency Improvement and Connectivity Strengthening in Archipelagic Southeast Asia	RETA	2,750,000
0092	CAM	Tonle Sap Lowlands Rural Development	Grant	9,900,000
0073	KGZ	Southern Agriculture Area Development	Grant	5,000,000
0086	MON	Community-Based Heating Supply In Rural Remote Areas	Grant	2,000 ,000
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
4061	PRC	Songhua River Water Quality and Pollution Management (Supplementary)	ADTA	5,000
4810	PRC	National Strategy for Rural Biomass Renewable Energy Development	ADTA	400,000

TA No.	Ctry	Title	Type	Total Amount (US$)
4812	PRC	Establishment of the Clean Development Mechanism Fund	ADTA	600,000
4849	PRC	Coal Mine Safety Study	ADTA	600,000
4869	TIM	Dili Water supply Performance Improvement	ADTA	1,000,000
3528	VIE	Capacity Building for Water Resources Management (Supplementary)	ADTA	150,000
4903	VIE	Viet Nam Water Sector Review	ADTA	580,000
4848	CAM	Water Resource Management (Sector)	PPTA	1,300,000
4896	IND	North Eastern Integrated Flood and Riverbank Erosion Management (Assam)	PPTA	850,000
4361	INO	Urban Air Quality Improvement Sector Development Program (Supplementary)	PPTA	280,000
4381	INO	Integrated Citarum Water Resources Management (Supplementary)	PPTA	275,000
4763	INO	Metropolitan Sanitation Management and Health	PPTA	1,200,000
4875	LAO	Small Towns Water Supply and Sanitation Sector	PPTA	500,000
4802	PAK	Community Water Storage and Irrigated Agriculture Development	PPTA	900,000
4793	PNG	Lae Port Development - Tidal Basin Phase I	PPTA	900,000
4783	PRC	Gansu Heihe Hydropower Development	PPTA	500,000
4804	PRC	Jilin Urban Infrastructure	PPTA	500,000
4631	PRC	Dryland Farming in the Northern Region (Supplementary)	PPTA	150,000
4805	PRC	Xinjiang Municipal Infrastructure and Environmental Improvement	PPTA	800,000
4808	PRC	Kunming Qingshuihai Water Supply	PPTA	600,000
4818	PRC	Gansu Baiyin Urban Development	PPTA	500,000
4819	PRC	Energy Conservation and Resource Management	PPTA	300,000
4831	PRC	Henan Ecological Agriculture and rural Productivity Improvement Project and the Central and Southern Shanxi Integrated Agricultural Development Project	PPTA	1,000,000
4867	PRC	Preparing the Qingdao Water Resources Management	PPTA	600,000
4853	SRI	Small Towns Rural Arid Areas Water and Sanitation	PPTA	870,000
4811	TAJ	Khatlon Province Flood Management	PPTA	500,000
4807	UZB	Djizzak and Surkhandarya Rural Water Supply and Sanitation Sector	PPTA	400,000
4001	VIE	Central Region Water Resources Sector (Supplementary)	PPTA	79,000
4001	VIE	Central Region Water Resources Sector (2nd Supplementary in 2006)	PPTA	35,000
4845	VIE	Support for Public-Private Development of the O Mon Thermal Power Complex	PPTA	1,700,000
6261	REG	Energy Efficiency Initiative Consultation Workshop (Supplementary)	RETA	300,000
6291	REG	Rolling Out Air Quality Management in Asia (Supplementary)	RETA	2,430,000
6322	REG	Energy Sector Strategy and Development	RETA	1,000,000
6325	REG	Promoting Effective Water Management Policies and Procedures (Phase 5)	RETA	3,200,000
6327	REG	External Forums for Selected Sectors and Thematic Priorities at the ADB	RETA	400,000
6334	REG	Kyoto Annual Meeting Pre-Event: Asian and Pacific Youth forum on Sustainable Development	RETA	150,000
6339	REG	Partnership on Persistent Organic Pollutants Pesticides Management for Agricultural Production in Central Asian Countries	RETA	400,000
6350	REG	Sustainable Urban Transport	RETA	1,000,000
6351	REG	Process Development for Preparing and Implementing Integrated Water Resources Management Plans	RETA	1,000,000

TA No.	Ctry	Title	Type	Total Amount (US$)
6357	REG	Central Asian Countries Initiative for Land Management Multicountry Partnership Framework Support	RETA	4,025,000
6361	REG	Managing Hazardous Wastes	RETA	400,000
6363	REG	Clean Energy Projects Eligible for the Clean Development Mechanism	RETA	840,000
6371	REG	Mitigation of Transboundary Air Pollution from Coal-Fired Power Plants in North-East Asia	RETA	900,000
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
4562	BAN	Early Warning Systems Study (piggy-backed to loan)	ADTA	250,000
4636	BHU	Capacity Building to Implement Environmental Assessment Procedures Project	ADTA	200,000
4669	CAM	Study of the Influence of Built Structures on the Fisheries of the Tonle Sap	ADTA	765,000
4605	COO	Strengthening Disaster Management and Mitigation	ADTA	600,000
4630	IND	Uttaranchal Power Sector Capacity Building	ADTA	500,000
4692	IND	Integrated Coastal Management and Related Investment Development	ADTA	250,000
4687	INO	Natural Resources Management in a Decentralized Framework	ADTA	600,000
4408	KGZ	A Study of the Impact of Land Reform on Agriculture, Poverty Reduction, and Environment (supplementary)	ADTA	130,000
4434	LAO	Poverty reduction through Land Tenure Consolidation, Participatory Natural Resources Management, and Local Communities Skills Building Project W/ ES	ADTA	124,300
4614	MLD	Promoting Sound Environmental Management in the Aftermath of the Tsunami Disaster	ADTA	400,000
4708	PHI	Aquaculture Development for Poverty Reduction	ADTA	500,000
4649	PRC	Alternative Energy Supply for Rural Poor in Remote Areas	ADTA	500,000
4706	PRC	Energy Conservation and Resource Management Project	ADTA	600,000
4810	PRC	National Strategy for Rural Biomass Renewable Energy Development	ADTA	400,000
4741	PRC	Institutional Development of SEPA's Regional Supervision Centers	ADTA	550,000
4641	PRC	Country Environmental Analysis	ADTA	150,000
4702	PRC	Study on Sustainable Urbanization in Metropolitan Regions	ADTA	500,000
4653	RMI	Increasing Ownership and Effective Demand for Improved Urban Waste Management	ADTA	300,000
4736	SRI	Capacity Building of the Environmental and Social Division of the Road Development Authority	ADTA	400,000
4667	THA	Capacity Building for Pollution Taxation and Resource Mobilization for Environment and Natural Resources	ADTA	225,000
4695	THA	Supporting Post-Tsunami Activities and Coastal Zone management in Thailand	ADTA	150,000
4613	THA	Subregional Development Plan for the Tsunami Affected Andaman Region	ADTA	1,750,000
4713	VIE	Capacity Building in Strategic Environmental Assessment of Hydropower Sector	ADTA	475,000
4711	VIE	Implementation of the Environmental Management Plan for the Son La Hydropower Project	ADTA	800,000
3528	VIE	Capacity Building for Water Resources Management (SUPPLEMENTARY)	ADTA	500,000
4714	VIE	Air Pollution, Poverty and Health Effects in HCMC	ADTA	600,000

TA No.	Ctry	Title	Type	Total Amount (US$)
34	CAM	Tonle Sap Sustainable Livelihoods	Grant	15,000,000
35	CAM	Tonle Sap Sustainable Livelihoods	Grant	4,738,000
9072	INO	Sustainable Livelihood Development for Coastal Communities in the Special Province of Nanggroe Aceh Darussallam	Grant	2,500,000
9073	INO	Rehabilitation of Coral Reef and Mangrove Resources in the Special Province of Nanggroe Aceh Darussallam	Grant	1,500,000
9062	LAO	Sustainable agroforestry system for Livelihood Enhancement of the Rural Poor	Grant	1,500,000
4571	PRC	Sanjiang Plain Wetlands Protection (EGEF)	Grant	12,140,000
6 / 11	SRI	Tsunami-Affected Areas Rebuilding Project	Grant	53,200,000
7 / 13	SRI	North East Community Restoration and Development Project II	Grant	5,900,000
4666	AFG	Natural Gas Development Project	PPTA	995,000
4726	AZE	Renewable Energy Development	PPTA	700,000
4756	CAM	Tonle Sap Lowland Stabilization	PPTA	1,000,000
4570	CAM	Sustainable Rural Water Supply and Sanitation (formerly Rural Water Supply and Sanitation)	PPTA	150,000
4654	KAZ	Second Rural Water Supply and Sanitation Sector	PPTA	650,000
4642	PAK	Punjab Irrigated Agriculture Development Sector Project	PPTA	1,242,000
4098	PAK	Rawalpindi Environmental Improvement (Supplementary)	PPTA	70,000
4584	PRC	Inner Mongolia Autonomous Region Environmental Improvement Project	PPTA	500,000
4631	PRC	Dryland Farming in the Northern Region	PPTA	400,000
4640	PRC	Ningxia Yinchuan Integrated Ecosystem Management	PPTA	850,000
4721	PRC	Shaanxi-Qinling Mountains Integrated Ecosystem Management Project	PPTA	500,000
4629	PRC	Integrated Ecosystem Management and Environmental Protection of the Baiyangdian Lake Catchment Project	PPTA	500,000
4628	PRC	Hefei Urban Environment Improvement Project	PPTA	750,000
4617	PRC	Nanjing Quinhai River Environmental Improvement Project	PPTA	600,000
4646	TIM	Urban Water Supply and Sanitation	PPTA	600,000
4709	UZB	Rural Renewable Energy	PPTA	300,000
4625	VIE	Song Bung 4 Hydropower Project Phase II	PPTA	1,575,000
6144	REG	Better Air Quality Management in Asia	RETA	390,000
6234	REG	Regional Asian Environmental Compliance and Enforcement Network (AECEN)	RETA	730,000
6236	REG	Central Asian Countries Initiative for Land Management	RETA	1,250,000
6263	REG	Establishment of the GMS Environment Operations Center	RETA	150,000
6285	REG	Strengthening Country Safeguard Systems	RETA	800,000
6286	REG	Capacity Building of Private Sector Financial Institutions in Meeting Environmental and Social Challenges	RETA	150,000
6289	REG	Core Environment Program and Biodiversity Conservation Corridors Initiative in the GMS	RETA	24,970,000
6291	REG	Rolling Out Air Quality Management in Asia	RETA	655,000
6292	REG	Promoting Environmental Investment in Asia and the Pacific	RETA	400,000
6293	REG	Managing the Cities in Asia	RETA	980,000

TA No.	Ctry	Title	Type	Total Amount (US$)
		2004		
4541	AFG	Natural Resources Management and Environmental Protection Project /Alleviation of Poverty in Buffer Zone	ADTA	1,785,000
4415	AFG	Kabul Air Quality Management	ADTA	450,000
4465	AZE	Institutional Strengthening of the Water Supply and Sanitation Sector in Secondary Towns	ADTA	500,000
4446	BAN	Support to the Roads and Highways Department for Safeguard Policy Compliance	ADTA	500,000
4376	CAM	Capacity Building for the Tonle Sap Poverty Reduction Initiative	ADTA	500,000
4427	CAM	Establishment of the Tonle Sap Basin Management Organization II	ADTA	300,000
4426	FSM	Public Utilities Corporate Governance	ADTA	400,000
4496	IND	Capacity Building for the Clean Development Mechanism in India	ADTA	700,000
4333	INO	Gas Generation from Waste	ADTA	500,000
4501	INO	Institutionalizing the Clean Development Mechanism	ADTA	750,000
4551	INO	Marine and Fisheries Sector Strategy Study	ADTA	880,000
4375	KAZ	Environmental Monitoring and Information Management System for Sustainable Land Use	ADTA	600,000
4408	KGZ	A Study of the Impact of Land Reform on Agriculture, Poverty Reduction and Environment (supplementary)	ADTA	400,000
4434	LAO	Poverty reduction through Land Tenure Consolidation, Participatory Natural Resources Management, and Local Communities Skills Building Project	ADTA	850,000
4432	PAK	Capacity Building for Environmental Management In Sindh	ADTA	400,000
4500	PAK	Capacity Building for Alternative Energy Development Board	ADTA	150,000
4552	PHI	Master Plan for the Agusan River Basin	ADTA	970,000
4389	PRC	Waste Coal Utilization Study	ADTA	400,000
4553	PRC	Support for Environmental Legislation	ADTA	400,000
4327	PRC	Flood Management Strategy Study (no Classification)	ADTA	500,000
4358	PRC	Capacity Building to Combat Land Degradation	ADTA	1,000,000
4404	PRC	Implementation of the National Strategy for Soil and Water Conservation	ADTA	379,000
4447	PRC	Evaluation of Environmental Policy and Investment for Water Pollution Control in the Huai River Basin	ADTA	500,000
4472	TAJ	Support for Monitoring Policy Reforms and Improving Farm and Water Management	ADTA	500,000
3528	VIE	Capacity Building for Water Resources Management (Sup)	ADTA	360,000
9060	AFG	Balkh River Basin Water Resources Management	Grant	10,000,000
9049	INO	Sustainable Livelihood Development for the Poor Coastal and Small Island Communities Project	Grant	1,500,000
9055	KGZ	Reducing Vulnerability of the Poor to Natural Disasters	Grant	1,000,000
4357 (G)	PRC	Capacity Building to Combat Land Degradation	Grant	7,700,000
9054	UZB	Affordable Services and Water Conservation for the Urban Poor	Grant	1,500,000
9058	VIE	Expanding Benefits for the Poor through Urban Environmental Improvements	Grant	1,000,000
4420	AFG	Western Basins Water Resources Management and Irrigated Agriculture Development Project	PPTA	1,960,000

TA No.	Ctry	Title	Type	Total Amount (US$)
4535	BAN	Secondary Towns Water Supply and Sanitation	PPTA	800,000
4533	BHU	Urban Infrastructure Development	PPTA	600,000
3997	CAM	Chong Kneas Environmental Improvement (Supplementary)	PPTA	113,000
4373	INO	Integrated Coastal Fisheries Resource Management	PPTA	790,000
4381	INO	Integrated Citarum Water Resources Management	PPTA	1,000,000
4411	INO	Water Supply and Sanitation Project	PPTA	900,000
4361	INO	Urban Air Quality Improvement SDP	PPTA	700,000
4438	KYG	Second Agriculture Area Development	PPTA	800,000
4377	LAO	Northern and Central Region Water Supply and Urban Dev. Project	PPTA	200,000
4419	LAO	Preparing the Forest Plantations Sector Project	PPTA	150,000
4419	LAO	Preparing the Forest Plantations Sector Project (supplementary)	PPTA	120,000
4425	PAK	Renewable Energy Development	PPTA	550,000
4367	PAK	Balochistan Rural Development and Drought Mitigation	PPTA	600,000
4525	PAK	Sindh Coastal and Inland Community Development	PPTA	650,000
4534	PAK	Sindh Basic Urban Services	PPTA	795,000
4324	PRC	Hunan Flood Management	PPTA	700,000
4436	PRC	Wuhan Wastewater and Stormwater Management Project	PPTA	700,000
4385	PRC	Guangxi Nanning Urban Infrastructure Development	PPTA	560,000
3998	PRC	Sanjiang Plains Wetland Protection Project (Supplementary)	PPTA	115,000
4531	SRI	Greater Colombo Wastewater Management Project	PPTA	850,000
4343	UZB	Land Improvement	PPTA	500,000
6016	REG	Clean Air Initiative for Asian Cities (Supplementary)	RETA	466,500
6144	REG	Better Air Quality Management in Asia (Supplementary)	RETA	245,000
6180	REG	Preparation of Asian Environment Outlook 2005	RETA	400,000
6198	REG	Capacity Building for Promoting Sustainable Development in the Greater Mekong Subregion	RETA	500,000
6204	REG	Mainstreaming Environmental Consideration in Economic and Development Planning Processes in Selected PDMCs	RETA	600,000
6208	REG	Ninth Agriculture and Natural Resources Research at International Agricultural Research Centers	RETA	300,000
6213	REG	GMS Biodiversity Conservation Corridor Initiative	RETA	400,000
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
4120	BHU	Strengthening Environmental Sector Capacity	ADTA	150,000
4273	COO	Legal & Institutional Strengthening of Environmental Management	ADTA	350,000
4270	FIJ	Capacity Building in Water and Sewerage Services	ADTA	783,000
4137	INO	Carbon Sequestration Through CDM in Indonesia	ADTA	700,000
4186	KAZ	Institutional Strengthening for Rural Water Supply and Sanitation Services	ADTA	350,000
4257	KIR	Supporting Land Use Management on Kirimati Island	ADTA	300,000

TA No.	Ctry	Title	Type	Total Amount (US$)
4193	PAK	Industrial Environmental Management Capacity Building	ADTA	1,000,000
4174	PHI	Rehabilitation and Renewable Energy Projects for Rural Electrification and Livelihood	ADTA	450,000
4309	PRC	Renewable Energy for Poverty Reduction	ADTA	600,000
4307	PRC	Poverty Reduction in Key Forestry Conservation Programs	ADTA	400,000
4308	PRC	Poverty Reduction in Grassland Improvement Program	ADTA	400,000
4215	PRC	Safe Drinking Water and Sanitation for the Rural Poor	ADTA	400,000
4229	SAM	Institutional Strengthening for Drainage and Wastewater Management	ADTA	400,000
4184	SRI	Greater Colombo Waste Water Management Sector Review	ADTA	150,000
4231	TAJ	Institutional Development for Improved Environmental Strategic Planning and Policy	ADTA	220,000
4254	THA	Capacity Building for Pollution Taxation and Resource Mobilization for Environmental & Natural Resources Sectors	ADTA	600,000
4214	TUV	Effective Waste Management and Recycling Project	ADTA	150,000
4173	UZB	Off-Grid Renewable Energy Development	ADTA	350,000
9035	LAO	Solid Waste Management and Income Generation for Vientiane's Poor	Grant	1,000,000
4197	CAM	Tonle Sap Sustainable Livelihoods Project	PPTA	1,260,000
4182	IND	Urban Clean Fuel Project	PPTA	995,000
4148	INO	Sustainable Agriculture Development for Food Security and Poverty Reduction	PPTA	800,000
4098	PAK	Rawalpindi Environmental Improvement	PPTA	350,000
4223	PRC	Shandong Hai River Basin Pollution Control Project	PPTA	600,000
4227	PRC	Jilin Water Supply and Sewerage Development	PPTA	650,000
4233	PRC	Henan Wastewater Management Project	PPTA	800,000
4143	TAJ	Water Resources Development and Rehabilitation	PPTA	600,000
6016	REG	Clean Air Initiative for Asian Cities	RETA	412,000
6093	REG	Promoting Effective Water Management Policies and Practices, Phase 2	RETA	1,000,000
6095	REG	Integrating Environmental Consideration into Development Policies, Plans and Programs for CARs, Azerbaijan	RETA	550,000
6099	REG	Management Issues in Central Asia	RETA	150,000
6102	REG	Renewable Energy and Energy Efficiency Program for the Pacific (REEP)	RETA	600,000
6115	REG	Poverty Reduction in Upland Communities in the Mekong Region through Improved Community and Industrial Forestry	RETA	800,000
6125	REG	Forests and Climate Change: Preparing for Decisions on Land use and Forestry at COP 9	RETA	20,000
6144	REG	Better Air Quality Management in Asia	RETA	300,000
6149	REG	Support for the Mekong River Commission Flood Management and Mitigation Program	RETA	1,000,000
6150	REG	Poverty and Environment Program	RETA	3,920,000
6155	REG	Capacity Building in Environmental Information Management Systems in Central Asia	RETA	800,000
6159	REG	Regional Air Quality Management	RETA	400,000
6163	REG	Improved Management of Shared Water Resources in Central Asia	RETA	700,000

TA No.	Ctry	Title	Type	Total Amount (US$)
		2002		
3837	INO	Improving the Environmental Performance of Small and Medium Enterprises by Promoting Cleaner Production	ADTA	500,000
3965	MON	Renewable Energy Development in Small Towns and Rural Areas	ADTA	400,000
3944	PAK	Industrial Environmental Management	ADTA	700,000
3921	PHI	Promotion of Cleaner Production Technologies	ADTA	775,000
3848	PHI	Metro Manila Solid Waste Management	ADTA	1,250,000
3840	PRC	Opportunities for the Clean Development Mechanism in the Energy Sector	ADTA	775,000
4061	PRC	Songhua River Basin Water Quality and Pollution Control Management	ADTA	1,000,000
3891	PRC	Study on Control and Management of Non-Point Source Pollution	ADTA	600,000
4049	SRI	Strengthening the Regulatory Framework for Water Supply and Sanitation	ADTA	285,000
3981	TAJ	Development of an Energy Conservation Program	ADTA	120,000
3986	TIM	Integrated Water Resources Management	ADTA	600,000
9023	CAM	Income for the Poor through Community-Based Environmental Improvements in Phnom Penh	Grant	1,000,000
3945(L)	PRC	Efficient Utilization of Agricultural Wastes	Grant	6,360,000
3998	PRC	Sanjiang Plains Wetland Protection (GEF-financed)	Grant	12,760,000
3892 (L)	VIE	Second Red River Basin Sector	Grant	10,600,000
3854	CAM	Environmental Assessment for the GMS Cambodia Road Improvement Project	PPTA	60,000
3997	CAM	Chong Kneas Environmental Improvement	PPTA	997,000
3885	IND	Energy Efficiency Enhancement	PPTA	600,000
3916	IND	Environmental Analysis for the Rural Roads Sector Development	PPTA	100,000
3977	INO	Community-Based Land Rehabilitation and Management	PPTA	800,000
4026	INO	Clean Vehicle Fuel for Blue Skies	PPTA	600,000
3903	LAO	Northern & Central Regions Water Supply and Sanitation Sector	PPTA	700,000
3844	NEP	Community-Based Water Supply and Sanitation Project	PPTA	750,000
3862	PAK	Punjab Community Water Supply and Sanitation	PPTA	125,000
3081	PRC	Coalbed Methane Demonstration Project (Supplementary)	PPTA	398,000
3638	PRC	Wuhan Wastewater Treatment - Supplementary	PPTA	199,000
3863	PRC	Mudanjiang Water Supply	PPTA	150,000
3919	PRC	Liaoning Environmental Improvement	PPTA	500,000
4014	PRC	Fuzhou Environmental Improvement Project	PPTA	600,000
3985	SAM	Preparing the Savaii Renewable Energy Project	PPTA	300,000
4059	SRI	Delivering Natural Resource and Environmental Management Services	PPTA	800,000
6031	REG	Promotion of Effective Water Management Policies and Practices	RETA	4,000,000
6039	REG	Pacific Region Environmental Strategy	RETA	400,000
6064	REG	Climate Change Adaptation for the Pacific Islands	RETA	800,000
6068	REG	Prevention and Control of Dust and Sandstorm in Northeast Asia	RETA	1,000,000
6069	REG	National Performance Assessment and Subregional Strategic Environment Framework in the GMS	RETA	1,600,000

TA No.	Ctry	Title	Type	Total Amount (US$)
		2001		
3784	IND	Conservation and Livelihood Improvement in the Indian Sundarbans	ADTA	450,000
3761	INO	Regulatory Framework for Private and Public Water Supply and Wastewater Enterprises	ADTA	790,000
3647	KAZ	Technology and Institutional Development for Sustainable Locust Management	ADTA	700,000
3746	LAO	Capacity Building for Environment and Social Management in Energy and Transport	ADTA	600,000
3700	NEP	Optimizing Water Use in Kathmandu Valley	ADTA	775,000
3675	PAK	Environmental Assessment	ADTA	50,000
3663	PRC	Optimizing Initiatives to Combat Desertification in Gansu Province	ADTA	610,000
3657	PRC	PRC-GEF Partnership on Land Degradation in Dryland Ecosystems	ADTA	1,150,000
3821	PRC	Nature Reserve Management Plan in Guangxi Zhuang Autonomous Region	ADTA	100,000
3749	PRC	National Guidelines for Urban Wastewater Tariffs and Management Study	ADTA	700,000
3808	SAM	Strengthening Energy Loss Reduction and Maintenance Management Capacity of the Electric Power Corp	ADTA	150,000
3624	SRI	Integrating Cleaner Production into Industrial Development	ADTA	800,000
3637	THA	Independent Review of Samut Prakarn Wastewater Management Project	ADTA	150,000
3706	UZB	Institutional Support for Sustainable Agricultural Development	ADTA	600,000
3729	UZB	Capacity Building for Urban Water Supply	ADTA	600,000
3683 (L)	BAN	Second Small-Scale Water Resources Development Sector	Grant	24,300,000
9009	BAN	Supporting Livelihood Improvement for the Poor through Water Management Associations	Grant	900,000
3519(L)	SRI	Protected Area Management and Wildlife Conservation	Grant	9,000,000
3778(L)	SRI	Protected Area Management and Wildlife Conservation	Grant	4,000,000
3659	BAN	Jamuna-Meghna River Erosion Mitigation	PPTA	1,000,000
3715	IND	Madhya Pradesh Integrated Water Resources Management Strategy	PPTA	600,000
3794	LAO	Tree Plantation for Livelihood Improvement	PPTA	700,000
3692	PHI	Integrated Coastal Resource Management	PPTA	933,000
3376	PRC	Songhua River Flood, Wetland, and Biodiversity Management	PPTA	250,000
3638	PRC	Wuhan Wastewater Treatment	PPTA	500,000
3639	SRI	Aquatic Resources Development and Quality Improvement	PPTA	800,000
3818	VIE	Forests for Livelihood Improvement in the Central Highlands Project	PPTA	1,560,000
5972	REG	Promotion of Renewable Energy, Energy Efficiency, and Greenhouse Gas Abatement Projects	RETA	5,000,000
5973	REG	MFI Environmental Group Meeting	RETA	25,000
5974	REG	Coastal and Marine Resources Management and Poverty Reduction in South Asia	RETA	600,000
5996	REG	Ten Years After Rio: Promoting Subregional Cooperation for Sustainable Development	RETA	200,000
6005	REG	Sixth Agriculture and Natural Resources Research at CGIAR Centers	RETA	4,000,000
6016	REG	Clean Air Initiative for Asian Cities	RETA	150,000
		2000		
3423	IND	Environmental Management at the State Level	ADTA	3,620,000
3499	KGZ	Environmental Monitoring and Management Capacity Building II	ADTA	650,000

TA No.	Ctry	Title	Type	Total Amount (US$)
3557	LAO	Strengthening Social and Environmental Management Capacity in the Department of Roads	ADTA	200,000
3393	PHI	Implementation of the Convention on Biological Diversity	ADTA	120,000
3469	PHI	Capacity Building Support for Pasig River Environmental Management and Rehabilitation	ADTA	630,000
3588	PRC	Transjurisdiction Environmental Management	ADTA	2,100,000
3497	PRC	GEF Program Approach to Land Degradation	ADTA	100,000
3548	PRC	National Strategies for Soil and Water Conservation	ADTA	800,000
3447	PRC	Strengthening Urban Solid Waste Management	ADTA	600,000
3522	RMI	Community Based Coastal Marine Resources Development	ADTA	298,000
3614	TAJ	Capacity Building for Environmental Assessment and Monitoring	ADTA	600,000
3583	THA	Mae Moh Environmental Evaluation	ADTA	500,000
3561	THA	Capacity Building for Regional Environmental Management	ADTA	900,000
3517	THA	Community Assessment and Development for the Samut Prakarn Wastewater Management	ADTA	150,000
3501	TIM	Environmental Assessment Capacity Improvement	ADTA	250,000
3528	VIE	Capacity Building for Water Resources Management (TA Cluster)	ADTA	3,800,000
9001	PHI	Supporting the Sustainable Livelihood for the Poor in Southern Philippines	Grant	2,800,000
9003	PHI	On-Site Urban Upgrading for Vulnerable Slum Communities of Payatas	Grant	1,000,000
9004	PHI	Off-Site and Off-City Relocation of Vulnerable Slum Communities of Muntinlupa City	Grant	1,000,000
9002	PNG	Low-Cost Sanitation, Community Awareness and Health Education Program	Grant	1,740,000
3605(L)	PRC	Wind Power Development	Grant	6,000,000
3477	SRI	Coastal Resource Management	Grant	12,760,000
3539	IND	Resettlement and Environmental Assessment for the West Bengal Corridor Development	PPTA	150,000
3442	KAZ	Locust Management Project	PPTA	100,000
3572	KAZ	Rural Water Supply Sector	PPTA	600,000
3535	LAO	Energy and Transport Socio-Environmental Management	PPTA	150,000
3544	LAO	Nam Ngum River Basin Development	PPTA	850,000
3604	PNG	Coastal Fisheries Management and Development	PPTA	340,000
3462	PRC	Acid Rain Control and Environmental Improvement	PPTA	964,000
3488	PRC	Hebei Province Wastewater Treatment	PPTA	850,000
3551	PRC	Fujian Soil Conservation and Rural Development, Phase II	PPTA	650,000
3571	PRC	Harbin Water Supply	PPTA	720,000
3570	THA	Solid Waste Management Sector	PPTA	1,250,000
5913	REG	Capacity Building to Promote Traditional Environmental Management in the Pacific DMCs	RETA	300,000
5918	REG	Study on Potential Use of Biotechnology in Reducing Poverty and Achieving Food Security in Asia	RETA	140,000
5934	REG	Regional Environmental Action Plan in Central Asia	RETA	500,000
5937	REG	Action Plans for Reducing Vehicle Emissions	RETA	900,000

TA No.	Ctry	Title	Type	Total Amount (US$)
5939	REG	Strategies for Poverty Reduction through Urban Environmental Improvement	RETA	500,000
5941	REG	Combating Desertification in Asia	RETA	450,000
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
3297	BAN	Urban Transport and Environment Improvement Study	ADTA	645,000
3379	IND	Strengthening Disaster Mitigation and Management at the State Level	ADTA	1,000,000
3324	IND	Community Participation in Urban Environmental Improvement	ADTA	150,000
3252	INO	Capacity Building for Decentralization of the Environmental Impact Assessment Process	ADTA	420,000
3384	INO	Sustainable Management for Tree Crops Development	ADTA	950,000
3350	KAZ	Strengthening Environmental Management	ADTA	700,000
3383	PAK	Integrated Pest Management	ADTA	500,000
3290	PRC	Capacity Building in Ministerial Status Responsibilities in the SEPA	ADTA	810,000
3211	PRC	Improving Environmental Management in Suzhou Creek	ADTA	840,000
3325	PRC	Shanxi Air Quality Improvement	ADTA	700,000
3271	SRI	Sustainable Natural Resource Management for Development	ADTA	800,000
3274	SRI	Cost Recovery Mechanism Analysis for Coastal Zone Protection	ADTA	150,000
3255	VIE	Study on the Policy and Institutional Framework for Forest Resources Management	ADTA	470,000
3300	BAN	Sundarbans Biodiversity Conservation	Grant	3,500,000
3234	INO	Natural Resources and Environmental Management Sector	PPTA	380,000
3364	NEP	Urban Environmental Improvement	PPTA	750,000
3282	PHI	Community-Based Forest Resources Management	PPTA	840,000
3216	PRC	Tianjin Wastewater Treatment and Water Resources Protection	PPTA	800,000
3372	PRC	Yunnan Comprehensive Agricultural Development and Biodiversity Conservation	PPTA	1,332,000
3376	PRC	Songhua River Flood, Wtland, and Biodiversity Management	PPTA	1,545,000
3277	SOL	Marine Biodiversity Conservation	PPTA	150,000
3273	SRI	Protected Area Development and Wildlife	PPTA	330,000
5840	REG	Promotion of Cleaner Production Policies and Practices in Selected DMCs	RETA	600,000
5844	REG	Promoting Sustainable Development Agenda in Asia: Ministerial Conference 2000	RETA	600,000
5860	REG	Institutional Strengthening and Collection of Environment Statistics	RETA	500,000
5861	REG	Capacity Building for Implementation of the Kyoto Protocol and the Clean Development Mechanism	RETA	200,000
5865	REG	Transboundary Environmental Cooperation in Northeast Asia	RETA	350,000
5866	REG	Fourth Agriculture and Natural Resources Research at CGIAR Centers	RETA	5,600,000
5867	REG	Water Resources Management in Southeast Asia (Phase 2)	RETA	250,000
5888	REG	Third ADB-NGO Consultative Meeting on Environment and Sustainable Development	RETA	150,000
5896	REG	Strengthening the Live Reef Fish Trade Management in the PDMCs	RETA	215,000
5899	REG	Subregional Environmental Monitoring and Information System (Phase II)	RETA	600,000
5900	REG	Regional Study on Forest Policy and Institutional Reforms	RETA	595,000

TA No.	Ctry	Title	Type	Total Amount (US$)
		1998		
3133	LAO	Strengthening Social and Environmental Management	ADTA	950,000
3079	PRC	TA Cluster to the PRC for the Promotion of Clean Technology	ADTA	3,500,000
3123	PRC	Provincial Legislation on Environmental Protection and Natural Resources Conservation	ADTA	300,000
3069	PRC	Soil and Water Conservation in the Upper Yangtze River Basin	ADTA	99,000
3095	PRC	Hai River Basin Wastewater Management and Pollution Control	ADTA	570,000
3139	PRC	Policies and Strategies for Sustainable Development of the Lancang River Basin	ADTA	660,000
3044	SAM	Evaluation of Sewage Treatment Options	ADTA	115,000
3013	THA	Promotion of Market-Based Instruments for Environmental Management	ADTA	605,000
3152	CAM	Sustainable Forest Management	PPTA	980,000
3089	IND	Calcutta Environmental Improvement	PPTA	1,000,000
3121	NEP	Watershed Rehabilitation and Management	PPTA	750,000
3018	PNG	Social and Environmental Studies	PPTA	150,000
2675	PRC	Market-Based Energy Conservation & Environmental Improvement (Suppl.)	PPTA	150,000
3025	PRC	Suzhou Creek Environmental Rehabilitation	PPTA	965,000
3036	PRC	Power Rehabilitation and Environmental Improvement	PPTA	1,000,000
3039	PRC	Yunnan Road Environmental and Social Analysis	PPTA	150,000
3047	SRI	Forest Resource Management	PPTA	800,000
5772	REG	Regional Training Course on Solid Waste Management in DMCs	RETA	75,000
5778	REG	Strengthening the Capacity of the ASEAN to Prevent and Mitigate Transboundary Atmospheric Pollution	RETA	1,000,000
5783	REG	Strategic Environmental Framework for the Greater Mekong Subregion	RETA	1,600,000
5784	REG	Appropriate Technology for Soil-Conserving Farming Systems (Phase I)	RETA	600,000
5797	REG	Training of Journalists in Management of Environmental Information Resources	RETA	40,000
5800	REG	Measurement of Environmental Performance	RETA	441,000
5826	REG	Asian Environmental Outlook	RETA	700,000
5822	REG	Protection and Management of Critical Wetlands in the Lower Mekong Basin	RETA	1,650,000
5816	REG	Mayors' Asia-Pacific Environmental Summit	RETA	85,000
		1997		
2805	INO	Strengthening of Urban Waste Management Policies and Strategies	ADOA	600,000
2946	KAZ	Institutional Dev of Policy Reforms for Improving Water Management	ADTA	600,000
2934	KGZ	Environmental Monitoring and Management Capacity Building	ADTA	598,000
2458	MON	Strengthening Land Use Policies (Suppl.)	ADTA	244,000
2847	NEP	Institutional Strengthening of the Ministry of Population and Environment	ADTA	600,000
2808	NEP	Implementation of the Pesticides Regulatory Framework	ADTA	100,000
2916	PHI	Water Supply and Sanitation Sector Plan Study	ADTA	600,000
2792	PRC	Study on Clean Coal Integrated Gasification Combined Cycle Technology	ADTA	500,000
2873	PRC	Improvement of Environmental Management in Shaanxi Province	ADTA	935,000
2975	PRC	EIA and Environmental Management Curriculum Development	ADTA	600,000

TA No.	Ctry	Title	Type	Total Amount (US$)
2951	PRC	Promotion of Market-Based Instruments for Environmental Management	ADTA	697,000
4813	PRC	Strengthening Flood Management Sustainability in Hunan Province	ADTA	400,000
2751	PRC	Capacity Building of Wastewater Treatment Operations in Anhui Province	ADTA	400,000
2906	PRC	Leadership Training on Urban Environmental Management in Key Cities	ADTA	600,000
2854	RMI	Fisheries Management	ADTA	598,000
2765	SRI	Institutional Strengthening for Environmental Impact Assessment	ADTA	600,000
2820	THA	Capacity Building for Waste Management Program Administration	ADTA	300,000
2859	UZB	Strengthening of Institutions Involved in Environmental Protection	ADTA	675,000
2871	VIE	Red River Basin Water Resources Management	ADTA	1,362,663
2852	VIE	Forestry Sector	Grant	7,000,000
2806	IND	Karnataka Coastal Environmental Management and Urban Development	PPTA	800,000
2936	IND	Urban and Environmental Infrastructure Fund	PPTA	400,000
2822	INO	National Biodiversity Information Network	PPTA	700,000
2958	INO	Marine Resources Evaluation Management and Planning	PPTA	970,000
2856	MAL	Industrial Pollution Control Management	PPTA	588,000
2928	PAK	Quetta Water Supply and Environment Improvement	PPTA	900,000
2803	PHI	Pasig River Environmental Management and Rehabilitation	PPTA	800,000
2835	PHI	Metro Manila Air Quality Improvement	PPTA	260,000
2770	PRC	Fuzhou Water Supply and Wastewater Treatment	PPTA	598,000
2870	PRC	Capacity Building for Energy Conservation	PPTA	78,000
2900	PRC	Financing Mechanism for Energy Efficiency Investment	PPTA	150,000
2901	PRC	Shanxi Environment Improvement	PPTA	590,000
2942	SRI	Biodiversity Conservation	PPTA	800,000
2859	UZB	Strengthening of Institutions Engaged in Environmental Protection	PPTA	675,000
2790	VIE	Ho Chi Minh City Environmental Improvement	PPTA	600,000
5595	REG	Regional Community Forestry Training Center in Kasetsart University (Suppl.)	RETA	1,400,000
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
2723	CAM	Institutional Strengthening and Expanding EIA Capacity	ADTA	600,000
2665	INO	Institutional Strengthening of the Forestry and Soil Conservation Services in the Segara Anakan Basin	ADTA	250,000
2641	KIR	Environmental Improvement	ADTA	72,500
2734	LAO	Nam Ngum Watershed Management	ADTA	1,200,000
2613	NEP	Institutional Strengthening of NEA's Environment Division	ADTA	534,000
2623	PHI	Evaluation of Environmental Standards for Selected Industry Subsectors	ADTA	400,000
2729	PRC	Industrial Pollution Investigation and Assessment in TVEs	ADTA	600,000
2693	PRC	Formulation of an Integrated Environmental Management Plan for the Chao Lake Basin	ADTA	800,000
2695	PRC	Coastal Resource Conservation and Environmental Improvement	ADTA	810,000

TA No.	Ctry	Title	Type	Total Amount (US$)
2726	PRC	Water Quality Management Planning for Suzhou Creek	ADTA	600,000
2735	PRC	Capacity Building for Nautral Resources Legislation	ADTA	800,000
2704	VIE	Hazardous Waste Management	ADTA	600,000
2563	PAK	Forestry Sector	Grant	1,145,000
2724	BAN	Biodiversity Conservation in the Sunderbans Forests	PPTA	500,000
2535	INO	Coral Reef Rehabilitation and Management	PPTA	600,000
2675	PRC	Market Based Energy Conservation and Environmental Improvement	PPTA	597,000
2619	SRI	Upper Watershed Management	PPTA	600,000
5669	REG	Capacity Building in Environmental Economics	RETA	598,000
5684	REG	Subregional Environmental Training and Institutional Strengthening in the GMS	RETA	1,665,000
5695	REG	Environmental Cooperation in Northeast Asia	RETA	495,000
5702	REG	Acid Rain and Emission Reduction for Asia, Phase II	RETA	600,000
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
2304	BAN	Strengthening Social Forestry in the Coastal Region	ADTA	130,000
2296	IND	Strengthening EIA Capacity and Environmental Legislation	ADTA	500,000
2403	IND	Strengthening the Capability of the Industrial Development Bank of India in Energy and Environmental Project Management	ADTA	585,000
2518	INO	Central Sulawesi Integrated Area Development and Conservation	ADTA	850,000
2397	KGZ	Strengthening Environmental Institutions and Improving Procedures for EIA	ADTA	556,000
2333	LAO	Institutional Development and Strengthening of the Ministry of Agriculture and Forestry (Ph II)	ADTA	597,000
2329	LAO	Strengthening Environmental Planning and EIA Capability	ADTA	610,000
2299	MAL	Strengthening the Institutional Framework for Sustainable Development	ADTA	142,000
2458	MON	Strengthening Land Use Policies	ADTA	580,000
2385	PHI	Environmental Evaluation of Swamps and Marshlands	ADTA	100,000
2298	PRC	Improving Coal Efficiency and Reducing Environmental Pollution	ADTA	590,000
2434	PRC	Establishing a Center for the Transfer of Environmentally Sound Technology	ADTA	550,000
2494	PRC	Sound Safety and Environmental Practices for Offshore Oil and Gas Production	ADTA	600,000
2398	PRC	Improving Environmental Monitoring and Enforcement in Henan Province	ADTA	90,000
2408	PRC	Land Use and Land Tenure Policy in Fujian Province	ADTA	600,000
2505	PRC	Strengthening Environmental Standards and Enforcement Policies	ADTA	600,000
2337	PRC	Coastal Environmental Protection and Institutional Assessment	ADTA	98,500
2394	PRC	Jianfengling Park Management and Biodiversity Conservation	ADTA	600,000
2407	PRC	Capacity Building for Soil and Water Conservation	ADTA	100,000
2456	PRC	Pilot Environmental Plans for Selected Medium Size Cities	ADTA	537,000
2422	SRI	Institutional Strengthening for Comprehensive Water Resources Management	ADTA	1,570,000
2351	THA	Strengthening the EIA Review Process	ADTA	600,000
2378	THA	Strengthening the Environmental Unit of the Department of Highways	ADTA	200,000

TA No.	Ctry	Title	Type	Total Amount (US$)
2319	TUV	Urban Planning and Environment Management	ADTA	310,000
2597	VAN	Sanitation Masterplan for Port Vila	ADTA	360,000
2375	VIE	Capacity Building for Prov. Water Supply and Sanitation Planning and Management	ADTA	700,000
2376	VIE	Community Environmental Health Improvements for the Provincial Towns	ADTA	500,000
2474	IND	Environmental Improvement and Sustainable Development of the Agra-Mathura-Ferozabad Trapezium in Uttar Pradesh	PPTA	600,000
2366	KAZ	Rehabilitation and Environmental Improvement of the Almaty No. 1 Heat and Power Station	PPTA	556,000
2425	MAL	EIA of the Kalaka-Saribas Integrated Agricultural Development-Phase II	PPTA	87,000
2350	MON	Energy Conservation	PPTA	100,000
2445	PRC	Xian-Xianyang-Tongchuan Environment Improvement	PPTA	500,000
2511	PRC	Zhejiang-Shanxi Water Conservancy	PPTA	1,000,000
2303	THA	Bangkok Metropolitan Region Wastewater Management Action Plan and Feasibility Study	PPTA	600,000
2369	THA	Solid Waste Management Sector Plan	PPTA	400,000
2411	VIE	Forestry Sector and Watershed Management	PPTA	598,000
5622	REG	Subregional Environmental Monitoring and Information System	RETA	1,000,000
5658	REG	Capacity Building for Environmental Law Training in the Asia and Pacific Region	RETA	600,000

Appendix 5
List of Environment-Related Knowledge Products (2003–2010)[1]

2010
• Knowledge Management on Air Quality: Case Studies
• Methodology for Estimating Carbon Footprint of Road Projects: Case Study: India
• Payments for Ecological Services and Eco-Compensation: Practices and Innovations in the People's Republic of China
• National REDD+ Strategies in Asia and the Pacific: Progress and Challenges
• Preview: Green Growth, Resources and Resilience: Environmental Sustainability in Asia and the Pacific 2010
• Dryland Ecosystems: Introducing an Integrated Management Approach in the People's Republic of China
• Responding the Climate Change in the Pacific: Moving from Strategy to Action
• Carbon Efficiency, Carbon Reduction Potential, and Economic Development in the People's Republic of China: A Total Factor Production Model
• Clean Energy in Asia: Case Studies of ADB Investments in Low-Carbon Growth
• Empowering People After Natural Disasters: Lessons from the Post-Tsunami Legal Assistance, Governance, and Anti-Corruption Project in Sri Lanka
• Higher Water Tariffs for Less River Pollution – Evidence from Min River and Fuzhou City, PRC (No. 201)
• Central Asia Atlas of Natural Resources
• Poverty and Sustainable Development in Asia: Impacts and Responses to the Global Economic Crisis
• Ho Chi Minh City Adaptation to Climate Change: Summary Report
2009
• Under the Weather and the Rising Tide: Adapting to a Changing Climate in Asia and the Pacific, Second Edition
• Rethinking Transport and Climate Change
• Complaint Handling in the Rehabilitation of Aceh and Nias: Experiences of the Asian Development Bank and Other Organizations
• Electric Two-wheelers in India and Viet Nam: Market Analysis and Environmental Impacts
• Investing in Sustainable Infrastructure – Improving Lives in Asia and the Pacific
• Protecting the World's Oceans: From Vision to Action
• Nature and Nurture: Poverty and Environment in Asia and the Pacific
• Green Transport: Resource Optimization in the Road Sector in the People's Republic of China

[1] Recently published knowledge products are accessible from http://www.adb.org/Environment/default.asp

• Economic Growth and Environmental Regulation: The People's Republic of China's Path to a Brighter Future
• Green Benches: What can the People's Republic of China Learn from Environment Court of Other Countries
• Understanding and Responding to Climate Change in Developing Asia
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
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Environment Program: Greening Growth in Asia and the Pacific

This publication presents a snapshot of the Asian Development Bank's (ADB) environmental strategies, programs, initiatives, partnerships, and a range of activities that demonstrate ADB's commitment to support environmentally sustainable growth in Asia and the Pacific—a strategic agenda of ADB's Strategy 2020. The report highlights innovations designed in selected ADB-supported projects with environmental sustainability as a theme that were approved in 2008–2010. It also discusses the emerging environmental challenges in the region, and previews ADB's strategies to strengthen its operational emphasis on the environment, including climate change, that would help realize green growth in Asia and the Pacific.

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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 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.

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