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Water for All: The Water Policy of the Asian Development Bank

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Abbreviations

ADB	–	Asian Development Bank
DMC	–	developing member country
IWRM	–	integrated water resources management
NGO	–	nongovernment organization
PRC	–	People's Republic of China

NOTE

In this report, "$" refers to US dollars.
This document has been edited for publication.

The context

Water, poverty, and the environment

Water is central to human existence.[1] A world without water is unthinkable. Its myriad uses are well known. But just as its abundance and efficient management enhance quality of life, its scarcity and wasteful use impact acutely on humanity. Water scarcity impacts on health, availability of food, and the conditions in which people live. The poor are particularly vulnerable when water is either unclean or in short supply. The Asian and Pacific region is home to nearly 900 million of the world's poorest people; accessing adequate clean water is one of their principal concerns. For many, finding water for their crops is a life-threatening issue. Difficulties encountered in accessing water frequently determine the level of poverty.

Asia's ecological balance is critically dependent on water. Salinization and aquifer depletion are the typical consequences of overuse of water. Once fertile lands in India, Pakistan, and Central Asia have been laid waste due to salinization. It has driven small and marginal farmers into penury. Widespread water pollution has resulted in increased water scarcity; poorer public health; lower agricultural yields; and a declining quality of aquatic life in lakes, rivers, and coastal waters. The poor are often landless and farm marginally productive areas. Forests are depleted, biodiversity is lost, catchment areas deteriorate, flooding is frequent, and groundwater recharge is diminished. Farm livelihoods, including those of the poor, become precarious and the cycle of poverty is entrenched. Watersheds and

1 In this paper, water refers to surface freshwater bodies, such as rivers, lakes, and wetlands, and underground water sources.

ecosystems have been severely degraded in most countries of the region. The poor have often borne the brunt of these adverse changes in the ecological balance.

The pollution of water bodies increases the incidence of waterborne diseases in rural and urban areas alike. The urban poor are compelled to spend a disproportionately large part of their scarce disposable income on water from private vendors. Hygienic sanitation is not available to almost 2 billion people in the region. Morbidity and mortality have increased and impact on productivity and incomes. Fetching water for drinking and cooking remains an arduous task in most rural areas. In rural Nepal and parts of the mountainous regions of the greater Mekong subregion, many village folk, mainly women and female children, still walk several kilometers over inhospitable terrain to fetch water. Employment and schooling are often foregone in the effort to sustain life. *Box 1 illustrates how the poor are affected by lack of access to water.*

Regional issues and impacts

In Asia, the relationship between water, poverty, and the environment is complex. While water has been a crucial factor in Asia's development, its management has not been without difficulty. About 40 percent of Asia's cropland is irrigated and helps produce about 70 percent of its food. Paradoxically, however, poorly conceived irrigation has also contributed to salinization and waterlogging. Associated problems include deterioration of surface and groundwater quality, loss of biodiversity (through drainage of wetlands, destruction of wildlife habitats, monocropping, and excessive use of agrochemicals), increased water shortages particularly in the dry season, increased incidence of pest outbreaks, eutrophication of surface water bodies, destruction of soil structure, and loss of natural fertility. Today, food production can be more efficiently increased by improving the utilization of water and other resources, rather thcn by expanding the land frontier. Groundwater-based irrigation, which has usefully supplemented surface irrigation, has sometimes deprived local residents of access to shallow groundwater supplies for domestic needs. In Bangladesh, it has resulted in serious arsenic contamination of groundwater. While hydropower accounts for about 20 percent of Asia's

electric power generation and has been a clean energy source, many of the associated storage reservoirs have produced significant environmental, ecological, and social impacts. Water supplies to Asia's cities have helped slake the thirst of millions but insufficient attention to wastewater treatment and disposal is causing serious environmental problems. With a burgeoning population, the pressures on Asia's water resources are rapidly becoming acute.

Box 1: Inequities in water: how the poor suffer

The lack of water accentuates the hardships of the poor.

In the remote hill areas of Nepal, many poor communities are compelled to fetch water from sources up to 15 kilometers away. Tradition requires that women and female children carry water over long distances. Physical deformities are common. Human dignity suffers acutely. Children are deprived of the opportunity to attend school.

Marginal farmers are often on the periphery of irrigation facilities. In many parts of the People's Republic of China, India, Pakistan, and Thailand, they are at the tail end of the distribution systems and almost never able to reliably access water. Low productivity and crop failures create food insecurity. Uncertain incomes perpetuate indebtedness, and social misery is compounded.

The urban poor in densely populated towns and cities in Bangladesh, India, and Nepal queue at public standposts to access limited quantities of water of dubious quality. In India, the poor are often confined to consumption levels below 15 liters per capita per day compared with the better off who consume up to 300 liters per capita per day. Because proper sanitation facilities are almost never available to them, the poor use community drains and city peripheries for excreta disposal. The environmental hazards of poor sanitary practices affects the urban poor more severely than others. The inequity is harsh—the poor have less time to spend on productive work, fall sick more often, and spend more on getting well. Seasonal shortages of potable water in the Pacific islands are chronic. People, particularly the poor, incur high costs in fetching water. Coconut water is often used to quench thirst. Poor water quality and associated health problems are a major concern in the Pacific region.

The pressure on water resources is compounded by Asia's limited freshwater endowments, which are among the world's lowest. South Asia, home to over a sixth of the world's population, has the lowest level of water resources per capita. Its per capita availability of water has dropped by almost 70 percent since 1950. During the past 50 years, per capita availability has declined by 60 percent in North Asia and 55 percent in Southeast Asia. This decline has mainly corresponded to rapid population increases at rates previously not experienced. Larger populations have meant increases in water consumption with attendant high levels of waste. Since all waste is not captured in the water balance, overall availability has declined. Industrialization, too, has been

responsible for higher water consumption (water efficient technologies are only now beginning to be introduced) with correspondingly higher levels of waste.

Low water availability, when coupled with high water withdrawals,[2] accentuates scarcity. Globally, water withdrawals have increased by over six times during the last century, or at more than double the population growth rate *(Appendix 1)*. Within the Asian and Pacific Region, water withdrawals are the highest in Central Asia (85 percent), followed by South Asia (48 percent), and Mongolia and northern PRC (25 percent). Correspondingly, these regions suffer from a high degree of water stress reflected in serious water scarcity and groundwater use that exceeds replenishment. The stress is heightened by rainfall variability and the uncertainty of dependence on water from international rivers. For instance, Bangladesh, Cambodia, Uzbekistan, and Viet Nam are highly dependent on the Padma, Mekong, and Amu Darya rivers; over half their annual water resources come from these rivers. Similarly, Bhutan, Fiji Islands, and Sri Lanka experience high rainfall variability.

The atoll islands[3] in the Pacific are deficient in surface water and prone to prolonged droughts. Surface water supplies are highly unreliable and groundwater resources are limited. Saltwater intrusion and pollution from human waste are increasing. While water scarcity is less pronounced in the larger volcanic islands,[4] the pollution of water bodies is becoming a serious problem in the urban areas. Water quality is also declining in villages in riverine and estuarine environments.

Future resource stress

Endowments. Between 1950 and 1995 the per capita availability of water resources dropped by almost 70 percent in South and Central Asia, by about 60 percent in North Asia, and by about 55 percent in Southeast Asia. In 2025, water availability per capita in the region will be between 35 and 15 percent less than the level in 1950. By 2025, half of Asia's projected population of 4.2 billion is expected to live in urban centers where increasing urbanization, industrialization, and profligacy

2 Water withdrawals are expressed as a percentage of total gross water availability.
3 Including Cook Islands, Kiribati, Republic of the Marshall Islands, Nauru, Tonga, and Tuvalu.
4 Including Fiji Islands, Papua New Guinea, Samoa, Solomon Islands, and Vanuatu.

are likely to put severe pressure on water availability. In view of the increasing competition for available water resources and the need to provide drinking water and sanitation as the first priority, the production of food to meet the needs in 2025 will have to be accompanied by a dramatic increase in the overall efficiency of irrigation water use. In Pakistan, more than 90 percent of total surface water withdrawals are for irrigation purposes. Pakistan, Sri Lanka, and Thailand, already under high water stress, are likely to suffer further; in all countries, water is a more limiting factor than capital in expanding irrigation. Regional food production needs in 2025 are assumed to be met by (i) expanding irrigated areas to 230 million hectares, and (ii) increasing productivity.[5] Limited water resources and current irrigation practices present difficulties on both counts. Appendix 1 presents trends in the water sector in the Asian and Pacific Region.

Demand. Domestic and industrial water demands in Asia are growing rapidly at rates projected to range from 70 to 345 percent between 1995 and 2025. Water for domestic use is still inadequate despite large investments in water supply systems since the 1980s. About 750 million people in rural areas and another 100 million in urban areas still have no access to safe drinking water. Hygienic sanitation is needed for 1.75 billion people in rural areas, and 300 million in urban areas. Until this demand is met, productivity, incomes, and health will continue to be impacted, especially for the poor, and human costs will remain high. Industrial demand continues to rise; because water is treated as a social, not an economic, good, the rapid development and adoption of water-efficient technologies is inhibited. Countries that are beginning to industrialize are witnessing quick growth in industrial demand. The PRC, India, Indonesia, Malaysia, Philippines, and Viet Nam are typical of countries whose water consumption needs are increasing as they rapidly move through the industrialization chain. In agriculture, too, demand for water continues to rise despite changes in cropping patterns and the introduction of new seed varieties that are less dependent on water.

5 Shiklomanov, I. A. 1997. *Assessment of Water Resource and Water Availability in the World.* Report prepared for the Comprehensive Assessment of Freshwater Resource of the World. Stockholm: Stockholm Environment Institute; and Seckler, D.U. Amarasinghe, D. Molden, R. de Silva, and R. Barker. 1998. *World Demand and Supply, 1990 to 2025: Scenarios and Issues*. Colombo: International Water Management Institute.

The fact that irrigated areas continue to use water inefficiently makes it more difficult to manage the demand. Competition for water is already acute in most countries in the region. Institutions and mechanisms are only very slowly being put into place to assess and manage demand, regulate the allocation of water among users, optimize water use, and resolve conflicts.

The demand for water has implications that go beyond the basic response of meeting it. For instance, industrial water use in Asia is expected to increase seven times between 1995 and 2025 in a scenario that assumes minimal efficiencies in water use. This implies an increase in the water pollution loads in the high-growth areas of Asia by up to 16 times for suspended solids, 17 times for total dissolved solids, and 18 times for biological pollution loading.[6] Increases of this order are life threatening. Reduced dissolved oxygen in lakes, rivers, and coastal waters will impact adversely on aquatic life. Similarly, an increase in total dissolved solids in irrigation water will mean lower crop yields. With most urban wastewater not treated, or treated minimally, the expansion of urban water supply systems unaccompanied by treatment facilities will continue to impose huge environmental costs.

Natural Calamities. Floods and droughts are a common natural hazard in Asia and have strong links with water and its management. Watershed degradation (comprising mainly deforestation and soil erosion) and unplanned urbanization (where urban settlements disrupt natural drainage systems) are the two principal factors for flooding. Ill-conceived river improvements and flood control measures also exacerbate natural flooding. Bangladesh, PRC, and Pakistan suffered serious flood losses from 1988 to 1998. Over 140,000 people died in Bangladesh in 1991 due to cyclonic flood surges. In 1998, an estimated 3,600 people died in the PRC during severe flooding of the Yangtze and the northeastern rivers, which resulted in $30 billion in economic losses. In the same year, more than 1,000 people died in a devastating flood that inundated 66 percent of Bangladesh, affecting 30 million of the population. Drought damage has been less easy to quantify but large parts of the PRC and India have been seriously affected by drought

6 United Nations Industrial Development Organization. 1996. *Global Assessment of the Use of Freshwater Resources for Industrial and Commercial Purposes.* Industry, Sustainable Development and Water Programme Formulation, Technical Report. Vienna.

from time to time. The poor are particularly affected by these calamities as they are less able to protect themselves. Global climate change may heighten the impact of floods and droughts in parts of Asia. In the absence of effective policies and infrastructure to manage water-related natural calamities, their impact in human and economic terms will continue to be severe.

Overall, water stress levels are high and demand will continue to outstrip supply. Water security has become a key issue not only for the poor, but also for others whose lives depend critically on water. Industrialization and rapid urbanization will continue to increase water scarcity. Already, cities are reaching out to more distant sources of water supply; relocating industries close to water sources no longer means assured supply. Today, stakeholders are seeing more clearly that the future will be more concerned with managing a dwindling resource and mitigating the adverse impacts of a profligate past.

The need for a comprehensive water policy

Water security is a rapidly growing issue in the Asian and Pacific region. The threat of inadequate safe water is real. At the same time, water is a key development ingredient that impacts on a variety of factors that sustain and enhance life. As a critical natural resource, the issues connected with managing it are inherently diverse and complex. They involve questions of allocation and distribution, equity, conservation, pricing, regulation, education, participation, and sustainable use. With the region's rapid population growth, rising industrialization, increasing environmental degradation and pollution, and the specter of a dwindling resource, stakeholders are now emphasizing the need for integrated water resource management in a comprehensive and holistic manner. Policies for the sustainable use of water need to be developed in consultation with all stakeholders.

The stakeholders' perspective

Stakeholders across the region are increasingly aware of the issues that determine the availability and management of water. Water users in agriculture, commerce, industry, or in the domestic sector, are broadly conscious of the scarcity and pollution factors; the Asian Development Bank's (ADB) surveys undertaken during the course of project and program preparation consistently show widespread awareness of the

physical problems concerning water availability. Water users are, however, less aware of technical and economic issues that are more the concern of developing member country (DMC) governments. Their participation in the regional water policy consultations[7] facilitated by ADB has demonstrated a sense of urgency among stakeholders to avoid a crisis of scarcity, pollution, and environmental degradation by adopting a more holistic and integrated approach to future investments in water and its management. The consultations also showed that institutional reforms are key to effectively addressing the technical, economic, social, and environmental issues concerning water. Such reforms need to be carefully planned and implemented.

It is widely recognized by water users that most of their governments have yet to adopt effective policies to regulate water allocation and conservation. Legislation to grant users rights to water, and to empower users to protect and advance their rights is commonly absent in most DMCs. Responsibilities for managing water are frequently fragmented and overlapping. This is nowhere more evident than at the local level where, for instance, infrastructure for rural water supply systems is provided by one government department and access to water sources for the system determined by another. Communities, both rural and urban, are rarely involved in resource planning and management. Women who are often more concerned with managing water are scarcely consulted. There is also a general lack of institutional capacity to deliver services and manage water resources efficiently. Legislation, holistic and integrated resource management, and community involvement are prerequisites to a renewed process for improved resource use.

Many international initiatives have been taken to promote the conservation and efficient management of water use. The Dublin and Rio conferences in 1992 were particularly significant in terms of perceiving water as an integral part of the ecosystem, a natural resource, and a social and economic good, and in promoting integrated water resources management. The first and second world water forums in Marrakech (1997) and The Hague (2000) have served to highlight the

7 Three workshops were held in May 1996, June 1997, and May 1998, the latter two in collaboration with the Global Water Partnership. See proceedings of May 1996 consultations: Asian Development Bank. 1996. *Towards Effective Water Policy in the Asian and Pacific Region*. Three volumes. Manila.

role of water in meeting basic human needs, preserving ecosystems, and managing water wisely. Appendix 2 contains a summary of major international and regional initiatives in water in the decade to 2000.

The international initiatives are also reflected in the policies and approaches for the water sector adopted by several international agencies. For instance, the World Bank's policy paper on water resources management (1993) describes a "comprehensive analytical framework" that is based on the river basin as the fundamental management unit. It underscores the fragmented nature of current water resources management and advocates a holistic, integrated, and comprehensive approach for improved efficiencies. The European Union, too, has recently drafted a framework for water management as the operational tool to implement a new European water policy. It has a strong environmental and ecological focus and requires member states to establish river basin management authorities. The Organization of Economic Cooperation and Development adopted (1998) the integrated water resource management model in its analysis on the performance and challenges of water management in its member countries. There is, therefore, broad global agreement on the approaches to improved water resources management.

ADB's perspective

ADB's perspective on water issues derives from a review of lessons learned from previous interventions in the sector, the distillation of good practices in the region and elsewhere, and current contexts. ADB has intervened actively in the water sector[8] and financed projects for irrigation, drainage, flood control, water supply and sanitation, hydropower, fisheries, forestry and watershed management, navigation, or multiple uses *(Appendix 3)*. Over $15 billion, or about 19 percent of its total lending, has been invested in water sector projects. Of this, hydropower ($2.8 billion), irrigation and drainage ($5 billion), water supply and sanitation ($4 billion), watershed management ($636 million), and flood control ($523 million) have been the principal areas of attention. Technical assistance worth $280 million has been provided to prepare projects, research sector issues, formulate sector

8 Projects that significantly affect the consumptive and in-stream uses of water, or the management and protection of freshwater resources.

solutions, and build institutional capacities. ADB's assistance has been provided mainly in the context of evolving country and sector strategies. Over time, however, ADB's lending for water projects, relative to its total lending, has declined from an annual average of 30 percent in the early 1980s to 16 percent in the 1990s. In dollar terms, however, annual lending for water over the eight-year blocs from 1968 has increased from $74 million during 1968-1975 to $875 million during 1992-1999. Moreover, while lending for other social sectors such as health, education, and rural development has increased during recent years (implying lower lending levels for water), the nature of lending for water has altered; ADB increasingly supports projects that promote efficient water management, improve irrigation and drainage, and provide effective flood management interventions.

The principal lesson learned from investments in the water sector, and from a review of the sector's current context in the DMCs, is that ADB, like its DMCs, needs to move rapidly from an era of disaggregated water sector investments aimed primarily at creating assets to an era of holistic, integrated investments to promote efficient water use. Investments in water supply and sanitation, irrigation and drainage, hydropower, flood control, and watershed management should be set in the context of managing water resources within river basins. The creation of assets in each subsector, and water use within that sector, have impacts on other sectors that need to be factored into investment decisions to optimize project designs. Competition for use of a dwindling natural resource requires ADB to support the development of an effective legislative framework that gives users rights to water and provides a mechanism for dispute resolution. Equally, ADB needs to promote efficiencies in water use by supporting demand management, including water pricing. The poor need to be targeted for equitable access to water. Communities need to be empowered, educated, and involved in the process of water management. Capacities need to be sustainably built to manage water use more efficiently. Good practices need to be replicated.

With the stakeholders and ADB seeing the need to act urgently and in concert to avert the clearly disastrous consequences of a business-as-usual approach to water development and management, the requirement for ADB to articulate a clearly focused policy to support

regional water initiatives is pressing. This policy, prepared in consultation with its development partners including nongovernment organizations (NGOs), representatives of user groups, the private sector, academia, and government agencies, will provide ADB with a means to more effectively meet the development challenge.

The policy

An overview

ADB's water policy is premised on the Asian and Pacific region's urgent need to formulate and implement integrated, cross-sectoral approaches to water management and development. It seeks to promote the concept of water as a socially vital economic good that needs increasingly careful management to sustain equitable economic growth and to reduce poverty. The conservation and protection of water resources in the region through a participatory approach are at the heart of the policy.

ADB's water policy has the following principal elements:

(i) **Promote a national focus on water sector reform**. DMCs will be supported to adopt effective national water policies, water laws, and sector coordination arrangements; improve institutional capacities and information management; and develop a national action agenda for the water sector. Throughout, the needs of the poor will be specifically factored into legal, institutional, and administrative frameworks.

(ii) **Foster the integrated management of water resources**. Integrated management will be based on conducting comprehensive water resource assessments, and concentrating interlinked water investments in river basins.

(iii) **Improve and expand the delivery of water services**. Focusing on water supply and sanitation (both rural and urban), irrigation and drainage, and other subsectors, support will be provided for autonomous and accountable service providers, private sector participation, and public-private partnerships, emphasizing equity in access to water for the poor and underserved.

(iv) **Foster the conservation of water and increase system efficiencies**. Packages that combine water use and resource management charges to recover costs, improved regulation and increased public awareness, and provisions to ensure that the poor are not excluded will be supported.

(v) **Promote regional cooperation and increase the mutually beneficial use of shared water resources within and between countries**. The primary focus will be on the exchange of information and experiences in water sector reform. Support will be provided to enhance awareness of the benefits of shared water resources, create sound hydrologic and socioenvironmental databases relevant to the management of transboundary water resources, and implement joint projects between riparian countries.

(vi) **Facilitate the exchange of water sector information and experience**. Socially inclusive development principles will be supported to promote stakeholder consultation and participation at all levels, increase access to basic water services by poor consumers, and enhance water investments in the DMCs through public-private-community-NGO partnerships.

(vii) **Improve governance**. This will be accomplished by promoting decentralization, building capacity, and strengthening monitoring, evaluation, research, and learning at all levels, particularly in public sector institutions.

The policy takes note of the recently approved ADB strategy for poverty reduction[9] and specifically provides for the involvement of the poor in water conservation and management. It recognizes that the specific needs and vulnerabilities of the poor are central in formulating sound and equitable water strategies. The poor must be enabled to influence decisions that affect their access to water for both consumptive and productive uses. The policy also reflects the considerable potential that exists for mobilizing community effort to directly contribute to pro-poor water development. It also requires that knowledge bases of the water needs of the poor be developed. The last section (page 35) describes how this policy complements ADB's poverty reduction strategy.

9 ADB. 1999. *Fighting Poverty in Asia and the Pacific; the Poverty Reduction Strategy*. Manila.

The policy also reflects ADB's strategy for private sector development.[10] Well-managed and cost-effective private sector participation will be promoted throughout the water sector to maximize efficiency.

National policies and reforms

Policies. Consistent with the adoption of Agenda 21 in 1992,[11] ADB will support the DMCs in ensuring that water projects are guided by effective national water policies that link water to national development goals and protection of the environment. While no single, common policy can serve as a model for all, it is clear that national water policies should address both resource management and service delivery aspects. ADB will help develop comprehensive water policies in the DMCs. Where necessary, ADB will help the DMCs review existing policies and bring them in line with good international practice. Assistance for undertaking water sector assessments will be provided to ensure that policy formulation and sector reforms are well grounded.

Reforms. Effective water policy will involve several reforms. Because project planning and implementation are commonly fragmented among many institutions, ADB will support the optimization of agency functions for planning and implementation. It will also focus on the development of effective cross-sectoral coordination mechanisms, such as a neutral sector apex body that can oversee the policy formulation and sector reform process. The structure and tasks of the apex body will evolve with the reform process. Regulatory capacities will be developed over time. Support will be provided for the review and revision of water legislation particularly in the areas of water rights and allocation among competing uses, water quality standards, groundwater use, demand management, resource conservation, private participation, and institutional responsibilities for water sector functions at national, regional or basin, local, and community levels. *Box 2 shows how some DMCs are managing water sector reform.*

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10 ADB. 2000. *Private Sector Development Strategy.* Manila.

11 United Nations Conference on Environment and Development. 1992. *Agenda 21*. Geneva: United Nations. *Agenda 21* is one of the principal documents adopted at the United Nations Conference on Environment and Development, or Earth Summit, in Rio de Janeiro in 1992.

Box 2: Managing water sector reform: Experiences from the People's Republic of China, Lao People's Democratic Republic, Sri Lanka, and Viet Nam

After the Asian Development Bank's (ADB) regional water policy consultations in 1996, several developing member countries (DMCs) were assisted in initiating water sector reforms, through sector assessments, development of strategic frameworks, and establishment or strengthening of water sector apex bodies.

In Sri Lanka, ADB helped assess the water sector. In 1995, Cabinet adopted the Strategic Framework and Action Plan for Comprehensive Water Resources Management. The actions include establishment of a national water resources council, formulation of a water policy, and preparation of a water law. The Council, established in 1996 with ADB assistance, has representation from government and nongovernment stakeholders, farmer groups, nongovernment organizations, academia, and gender and development interests. A comprehensive policy, legal, and institutional reform package, prepared by the Council was approved by the Cabinet in 2000.

In the Lao People's Democratic Republic, ADB helped initiate a water sector assessment and a national water sector profile in 1996. The Water Resources Coordinating Committee, established in 1999 in the Prime Minister's Office, prepared a sector strategy and action plan, which was approved by the Government. ADB is now helping implement the action plan, including capacity building of the committee's secretariat and preparatory work for integrated water resources management in important river basins.

ADB helped the People's Republic of China undertake a comprehensive study of strategic options for the water sector. The study provides an overview of the issues facing the country, together with a coordinated program of recommended policy reforms and initiatives.

Viet Nam's law on water resources, adopted in 1998, includes provisions for water abstraction, discharge permits, river basin planning and management, and inspection functions. Earlier, in 1994, ADB helped the Government to undertake a sector assessment. A national capacity-building program to implement the law has been developed. ADB has formed a partnership with other development partners to assist the Government in establishing the National Water Resources Council, river basin organizations, and capacity in technical and cross-cutting dimensions to improve water resources management and water service delivery.

Targets. Given the vital relationship of water to several development challenges, targets have often been set at international fora or by individual DMCs. For instance, the Second World Water Forum at The Hague in March 2000 discussed a number of indicative targets. These include (i) the proportion of people without sustainable access to adequate quantities of affordable and safe water reduced by half by 2015; (ii) the proportion of people without access to hygienic sanitation facilities reduced by half by 2015; (iii) national standards to ensure the health of freshwater ecosystems established in all countries by 2005, and programs to improve the health of freshwater ecosystems

implemented by 2015; (iv) water productivity for food production from rainfed and irrigated farming is increased by 30 percent by 2015; (v) cooperation mechanisms between riparian states for all major river basins are developed and strengthened by 2005, and subsequent shared water agreements are formulated by 2015; and (vi) the economic value of water is recognized and reflected in national policies and strategies by 2005 and mechanisms established by 2015 to facilitate full cost pricing for water services where guarantees for the poor exist. These targets reflect the common goal of the forum, namely, to provide water security in the 21st century. ADB will assist the DMCs in developing and adopting water action agendas that have clearly defined objectives and milestones linked to resources.

Water resource management

River basin planning and management

In the past, few projects were derived from a comprehensive water resource strategy. Even fewer took account of other water uses in the project area. The emphasis was mainly on the productive use of water resources, with little attention paid to managing the resources themselves. To meet the increasing challenges of water scarcity, pollution, and degradation of watersheds and ecosystems, water and related resources need to be managed in an integrated manner. Integrated water resources management (IWRM) is a process to improve the planning, conservation, development, and management of water, forest, land, and aquatic resources in a river basin context, to maximize economic benefits and social welfare in an equitable manner without compromising the sustainability of vital environmental systems. IWRM addresses quantity and quality concerns for surface and groundwater, and opportunities for their conjunctive use. It is typical for IWRM to be undertaken in a river basin context because river basins or, in some cases, groundwater basins, form the natural unit to manage water resources. ADB will help the DMCs introduce IWRM and undertake comprehensive water resource assessments in river basins as a basis for future water investment projects. These assessments will enable a better understanding of the links between water and land use, the environment, and sustainable development.

Based on the IWRM approach, ADB will support the decentralization of planning, development, and management of water and related resources to levels that respond best to river basin boundaries, groundwater aquifers, or hydrological regions. To ensure effective IWRM, river basin organizations need to be established with monitoring and regulation from higher levels. River basin management concerns need to be matched pragmatically with the requirements of local government jurisdictions through stakeholder consultation. ADB will support the development of structures that respond to these needs.

To implement IWRM, ADB will support the establishment of river basin organizations (both formal and informal) to facilitate stakeholder consultation and participation, and to help improve planning, information gathering, monitoring, and advisory services to local and national authorities. The basin organizations will help prepare and maintain basin profiles with information on water demand and uses, and approved planning directions and standards. Community involvement in resource monitoring and management will be organized on a river basin basis.[12] Legally authorized institutions need to be established to provide bulk water supply to local subsector service providers; ADB will provide technical assistance to help establish such institutions.

Water allocation

Reallocation of water among competing uses is rapidly becoming a common challenge in the region. This impacts most on the poor who are insufficiently empowered to claim water rights. ADB will encourage the DMCs to adopt participatory and negotiated approaches for water allocation. It will support the evolution of water allocation through markets of transferable water rights once the necessary policy, legal, and institutional framework for IWRM in a river basin context have been put in place. Regulatory agencies will be helped to develop water rights in a manner that protects the rights of the poor to equitable water services. Until such time as transferable water rights are properly

12 As shown by Malaysia, whose experience was used to develop the stream watch and river care programs in Australia's Murray-Darling basin, which involve school children and local communities.

developed, ADB will support the introduction of systems of water entitlements, or usage rights, as currently contemplated in Sri Lanka and Viet Nam.

Environmental protection and social measures

ADB will adopt a cautious approach to large water resource projects—particularly those involving dams and storage—given the record of environmental and social hazards associated with such projects. All such projects will need to be justified in the public interest, and all government and nongovernment stakeholders in the country must agree on the justification. Where the risks are acceptable and ADB's involvement necessary, ADB will ensure that its environmental and social impact assessment procedures are rigorously applied. Any adverse environmental effects will be properly mitigated, the number of affected people in the project area will be minimized, and those adversely affected will be adequately compensated in accordance with ADB's policy on involuntary resettlement.[13] In line with its energy sector policy,[14] ADB will continue to extend its support for technically and economically feasible hydropower projects that form part of a country's least-cost energy development plan, provided their environmental (including impact on fisheries) and social effects can be satisfactorily managed in accordance with ADB policies.

Water quality is an increasingly acute concern in most DMCs and one that ADB shares. The effects of water pollution are mainly felt at the local level and particularly affect the poor. To help stakeholders address water quality issues, ADB will support water quality investment programs that focus on four existing gaps: (i) knowledge development of the impact of human activities on water quality, and of water quality requirements for ecosystems, including determination of water quality thresholds; (ii) management of land conversion, including protection of catchments and wetlands, which are the natural filters in many aquatic systems, and pollution prevention at source; (iii) improving water management to reduce the inefficient use of water, excessive water abstraction, and groundwater pumping leading to salinization; and (iv) reducing pollution by urban and industrial users, through on-

13 ADB. 1998. The Bank's Policy on Involuntary Resettlement. In *Handbook on Resettlement*. Appendix 1. Manila.

14 ADB. 1995. *Bank Policy for the Energy Sector*, R4-95, Revision 2.

site or combined wastewater treatment and reuse, and improved farming practices. The introduction of wastewater discharge permits and effluent charges as part of water rights administration will be encouraged.

Watershed and wetland protection is an integral part of water resource management in a river basin context. The maintenance of critical watersheds is part of ADB's policy on forestry,[15] which emphasizes the need to set aside old-growth forests for conservation and watershed protection. ADB will pursue the protection and rehabilitation of degraded forestlands. To rehabilitate watersheds, ADB encourages the involvement of local communities and NGOs. Wetlands have important functions in the river basin, including flood alleviation, groundwater recharge, water quality improvement, ecosystem maintenance, and biodiversity conservation. ADB will promote wetland conservation and improvement in a river basin context.[16]

Flood protection and control

Flood damage rehabilitation currently constitutes about 80 percent of ADB's lending under its emergency assistance facility. ADB will continue to help the DMCs reduce economic losses from floods and rapidly restore economic infrastructure and social services after such disasters. ADB will seek to increase its understanding of the effects of periodic El Niño and La Niña events on climatic patterns, and share its knowledge and experience with the DMCs. This will help the DMCs to anticipate natural calamities, and minimize economic and social damage. ADB will adopt a proactive approach to reduce the severe economic and social costs of natural disasters by promoting the use of combined structural and nonstructural approaches to flood protection, including flood-risk insurance.

Given that policies and programs aimed at improved management of natural resources may, in the medium term, have negative consequences for the poor (for example, by converting flood-prone squatter settlements back to wetlands, or by prohibiting tree-felling

15 ADB. 1995. *The Bank's Policy on Forestry*. Manila.

16 This will be in accordance with *The Convention on Wetlands of International Importance especially as Waterfowl Habitat*, an intergovernmental treaty concluded at the International Conference on the Conservation of Wetlands, Ramsar, Iran. 1971. Paris: United Nations Educational, Scientific and Cultural Organization.

and farming on fragile upland areas), it may not be possible to give priority in flood management projects to protection of the assets of the poor. Nevertheless, poverty reduction will be targeted by carefully formulating flood management projects, and negative impacts will be eliminated by ensuring compensation for loss of assets or livelihoods and assistance in reestablishing productive activities.

Improving water services

Decentralization. Because demand for water services across subsectors is increasing rapidly, measures for conservation and demand management need to be urgently introduced or strengthened. Governments also need to modify their role from one of service provider to regulator. Experience has shown that irrigation and water supply services are most efficient when delegated to autonomous and accountable service providers.[17] Most DMCs require a phased program to increase the autonomy and accountability of service providers, either as new enterprises or by reorganizing existing agencies. ADB's sector strategies within countries will identify the need for introducing such a program. Details will be developed through dialogue with stakeholders and will include community participation, corporatization, commercialization, and privatization where appropriate.

Private sector participation. Private sector initiatives and market-oriented behavior are expected to improve performance and efficiency, particularly in service delivery. ADB will seek to provide innovative financial packages to enable commercial lenders and promoters to manage the risks involved with investing in water-related projects. In financing build-operate-transfer and build-own-operate projects from its private sector window, ADB will promote selection through competitive bidding. Through such financing ADB will secure additionality of resources for the water utility, superior management structures, advanced project implementation capability, construction technology, and improved operation and maintenance services. ADB will also assist DMCs to identify suitable projects for such financing and engage concessionaires. Where utilities are privatized, ADB's various financing and guarantee modalities can help obtain access to

17 These are usually public, private, or cooperative agencies that provide measured water to their customers or members in a defined geographic area for an appropriate fee.

credit with longer maturities and provide relief from the debt-service burden in the early years of operation. To maximize the efficiency of publicly owned and managed water service delivery systems, ADB will promote the contracting out of specific operations to the private sector.

Public-private partnerships. While governments will be primarily responsible for water resource management, several management functions will attract private investments. Others may be contracted out. Global experience indicates that public responsibility and ownership are often best blended with private management. Water supply and wastewater treatment services in urban areas can be leased to the private sector, or concessions made against agreed performance parameters. In most DMCs, a significant increase is needed in the level of public sector investment in water resource management, including physical infrastructure, institutions, and capacity building. These investments will be targeted at the development, management, and conservation of water resources in river basins, mainly through package programs and multipurpose projects, in a river basin context. The private sector will need to share the burden of investments if the capital intensive programs are to be implemented in a timely way, and if efficiency gains are to be realized. ADB will develop modalities for public-private partnerships in the management of physical infrastructure. *Box 3 illustrates how partnerships with the private sector in water service delivery generally promote efficiency.*

Participation. The participation of users in irrigation and drainage system operation and maintenance at the local level has increased significantly over recent years. Participatory management and turnover of responsibilities to users has started in many small and medium-scale irrigation schemes. Participation of consumers in local water supply and sanitation projects has also improved efficiency, increased ownership, and thereby lowered the rates of unaccounted-for and nonrevenue water.[18] User participation will also be supported to

18 Nonrevenue water is the volume of treated water produced minus volume of billed consumption, usually expressed as a percentage of volume of treated water produced; volumes may be estimated, measured, or a combination of both depending on the extent of metering. Unaccounted-for water and nonrevenue water are not synonymous; for example, if standpipe water use can be estimated or metered, it is not included in unaccounted-for water, but if revenue is not derived from the water at the standpipe, the water is included in the total nonrevenue water figure.

Box 3: Associating with the private sector: Some illustrative examples

Obtaining efficiencies in managing water resources is often best done in partnership with the private sector. Public limited companies can manage water supply in urban centers. In the Philippines, public limited companies cover 400 water districts. Their five-member boards represent a variety of customer interests –business, women's organizations, and households. They are overseen by the local water utilities administration that also undertakes informal regulation.

In Thailand, the Government established East Water as a subsidiary of the Provincial Waterworks Authority in 1992. The objective was to expand the system and manage it with resources from the private sector. The Government took back all the water supply facilities it had invested in on the eastern seaboard and leased them to East Water for 30 years. East Water is making profits annually, the quality of service has improved, nonrevenue water is less than 5 percent, the company is listed on the Thai stock exchange, and the Government is not burdened with expenditure for water supplies – a win-win situation for all.

In the Philippines, water supply and sewerage services in the Metro Manila area were awarded in 1997 as concession contracts for 25 years. Service quality has improved markedly with regular hours of supply, fewer interruptions, an improvement in water quality, and significantly reduced water bills.

Uzbekistan offers a recent example of attracting private investors. Economic regulation of the water supply sector has been introduced, tariffs increased, and subsidies reduced. Management has been decentralized to the provincial level, and tax exemptions and privileges are being offered to international investors. Metering has been introduced to improve demand management.

In Chennai, India, the Metropolitan Water Supply and Sanitation Board has contracted out operation and maintenance services for the sewage pumping stations. Cost reductions of 40 percent have been achieved. Water tanker services have also been contracted out – delivery costs have declined by half and volume delivered increased by 100 percent.

Associating with the private sector does not always bring benefits. In Sri Lanka, the National Water Supply and Drainage Board contracted out meter reading and billing for its water supply services. With irregular readings and billing delays averaging six months, it decided to undertake the functions in-house. Bills are now sent out within a month of meters being read and consumer complaints have fallen from over 10 percent to less than 2 percent.

(i) make services and service providers more responsive and accountable to beneficiaries, (ii) align the provision of services with users' needs and ability to pay, thereby improving cost recovery and sustainability, and (iii) tailor institutional arrangements for water service management to local practices. Participation will be the cornerstone of ADB's country water sector strategies; institutional arrangements for participation, particularly at the community level, will be strengthened.

Water supply and sanitation. The autonomy of service providers, especially in terms of staffing and tariffs, but not privatization, is

typically the central issue in urban water supply and sanitation systems. At the same time, there are significant opportunities for increased private participation in new investments and the management of existing systems. ADB will support the upgrading of existing systems in physical and managerial terms. This will help reduce the current unacceptably high levels of unaccounted-for-water and nonrevenue water in many cities. Also, ADB will help develop contracting modalities that allow potential investors to participate in the expansion and improvement of services. In particular, contracts that address social equity concerns and improve water and sanitation services to the poor will be developed.

Irrigation and drainage. ADB will promote the achievement of higher irrigation efficiencies in a basin context. This will optimize the performance of irrigation and drainage systems. Subsidies for operating and maintaining public irrigation and drainage systems will be phased out. Virtuous cycles of investment, user charges, and operation and maintenance by autonomous and accountable service agencies, with user representation, will be established to successfully modernize irrigation and drainage systems. The phased turnover of responsibilities for distribution system operation and maintenance to farmer groups will be promoted, and measures will concurrently be implemented to improve system sustainability. Correspondingly, the collective and individual rights and responsibilities of water users (including poor and marginal farmers at the tail end of irrigation systems), service providers, and public agencies will be clarified and agreed. ADB will seek to initiate monitoring and benchmarking of performance indicators for irrigation and drainage service providers.

Conserving water

Cost recovery. Conservation of water and its sustainable use are increasingly critical factors in managing a scarce resource. Governments and civil society need to see water as an economic good. Financial incentives for optimizing water use will be strengthened through a mix of water charges, market-based instruments, and penalties. Public awareness programs will reinforce the incentives. The incentives include water use rights, licenses and charges, tradable permits, effluent charges, water treatment fees, access fees, environmental liabilities,

fishing rights, and tax incentives. Managing water demand is a function of efficient pricing, effective regulation, and appropriate education and awareness. ADB will promote tariff reforms through its water-related projects and programs to modify structures and rates so that they reward conservation and penalize waste.

ADB will consistently advise governments of the need to adopt cost recovery principles in their water policies and strategies. The expansion of access to water and the improved provision of water services require that capital costs be funded mainly from within the sector by accessing debt markets and developing appropriate tariff structures. Consumers will be expected to meet the full operating and maintenance costs of water facilities and service provision in urban and rural water supply and sanitation schemes subject to subsidy considerations. ADB will also promote the inclusion of environmental externalities and the recovery of resource management costs in tariff systems adopted by the DMCs.

Evidence from scores of water projects shows that the poor are increasingly willing to pay for water services that are predictable and effective. Governments have been consistently mistaken in their assertions that charging farmers for irrigation services is not possible because of their inability to pay. Several irrigation regimes in the region, including those in Indonesia, Pakistan, Thailand, and Viet Nam, show that farmers, including poor farmers, are willing to pay for irrigation services that are efficient and reliable. Likewise, requiring the poor to pay for the true costs of urban and rural water supplies is possible and has been found to be an effective means of sustaining the services and involving the poor in their management. ADB will continue to press for and support policies that provide for explicit participation of the poor in water-related projects; simultaneously, it will promote the phased elimination of direct subsidies to the poor for accessing basic water services in line with an increase in affordability levels.

Subsidies are a controversial issue in the water sector. ADB will support subsidies for water services in the following circumstances: (i) where treated water uses have beneficial external effects in preventing health problems, (ii) where the transaction costs of measuring usage are very high, and (iii) where a limited quantity of treated water for the poor is regarded as a basic human need. Taken

together, these circumstances may justify a limited lifeline element in tariff policy. Other forms of subsidies, such as cross-subsidization between systems, will be reviewed to ensure that targeting is efficient and transparent. However, in the long term, governments and regulatory agencies will be persuaded to phase out subsidies as economic conditions improve.

Regulation. To serve the best interests of both consumers and the managers of water resources, the system of pricing, incentives, and penalties, regardless of its simplicity or sophistication, requires to be regulated. Regulatory systems need to be established to ensure that laws, standards, rules, and regulations are equitably and consistently applied. In most DMCs, such systems are absent and it is left to the government to play the role of provider and regulator. Regulatory frameworks for the maintenance and enhancement of water quality, as well as the conservation of water resources, will receive particular attention. ADB will promote the establishment of regulatory systems through its policy dialogue with the DMCs and by leveraging its loan and technical assistance programs to this end.

Awareness and education. ADB will also promote wide-ranging public awareness and community education programs especially among women, youth, and farmer groups to convey the message that water is a resource that needs prudent management. In particular, education that helps communities understand the linkages between water, sanitation, health, and productivity will be encouraged. In its water-related projects and programs, ADB will incorporate components that educate the industry on the efficient use of water, and the need for higher prices for both water use and effluent treatment and discharge. Clearly, the mindsets of people have to change. It is insufficient for policymakers to approach water resource management differently; those who consume water also need to recognize the critical nature of the resource.

Promoting regional cooperation

Promoting understanding. By assisting with water sector assessments in riparian countries, and helping with the exchange of data, ADB will promote awareness and understanding of water resource issues and needs within each country. This will have positive effects

on subregional and regional cooperation, and on broader economic development by improving river management for flood control, irrigation and drainage, energy, inland transport, and food. ADB is well positioned to promote both bilateral and multilateral riparian cooperation, through international or regional agreements, alone or in concert with other multilateral agencies, and will respond positively to all requests to do so. Currently, ADB is involved through regional technical assistance programs in supporting the Southeast Asia water partnership as well as the South Asia water partnership in exchanging information and ideas on national water sector reforms. In the Greater Mekong Subregion, ADB is supporting studies that will lead to improved management of the Tonle Sap, an internationally significant wetland area, related to the Mekong River whose resources are shared by six countries.

Cutting across boundaries. Optimizing water resources will involve transboundary water management. Many rivers are shared by countries, and within countries, by states or provinces. The management of international water resources is an important, unfinished agenda for the region. Based on joint requests from riparian countries, ADB will support joint projects for the planning, development, and management of shared water resources, including the mapping of physical and institutional resources, information sharing, and establishment of a regional legal regime[19] encompassing dispute resolution mechanisms. Given its ability, neutrality, and comparative advantage in providing assistance of this nature, ADB will assist governments to develop collaborative frameworks with riparian stakeholders. These will include an assessment of the downstream impact of any ADB-financed water project, in a river basin context.

The development of several major river systems shared by the DMCs such as the Mekong and Ganges-Brahmaputra, is currently suboptimal. Resources are insufficient, as is the understanding of the opportunities and constraints to the development and management of water resources

19 Examples of legal regimes are the Helsinki Rules on the Uses of the Waters of International Rivers, formulated by the International Law Association and the International Law Commission in 1966; Chapter 18 of Agenda 21 (footnote 10), which includes provisions for transboundary water resources management; and the Convention on the Law of the Non-navigational Uses of International Watercourses, adopted by the United Nations General Assembly in 1997 for ratification by 2000.

in these river basins, including the benefits of alternative development strategies. The cumulative environmental impact studies of alternative combinations of investment projects are also not available. Strategically, ADB will accord higher priority to the optimization of existing systems. In line with this approach, and subject to joint requests made by governments concerned, ADB will be prepared to help operationalize international arrangements to manage river systems.

Fostering participation

Concept. Given water's unique life-sustaining characteristics, participation is a key ingredient in its conservation and management. Over time, ADB has recognized that communities are at the heart of effective water management. They are the de facto resource managers and protectors of the environment. Consumer associations in urban areas and water users' groups or irrigation cooperatives in rural areas are being increasingly involved in management both in ADB-assisted projects and others. Community-based water quality monitoring is yet another dimension where communities are addressing social equity concerns. ADB will promote participation in the management of water resources at all levels and collaborate in fashioning partnerships between governments, private agencies, NGOs, and communities. It will encourage and respect local and national ownership of pragmatic solutions to consultation, participation, and partnerships. Getting the poor to participate, and mainstreaming them into community thought and action, will be a key area of ADB work. *Box 4 shows how participation can make a difference.*

Strategy. Participation is necessary to ensure that conflicting interests are harmonized and that inequities are removed. Communities and individuals that are underserved—including the urban poor and the socially excluded, such as ethnic minorities and indigenous peoples—need to be mainstreamed,[20] ADB will promote the recentering of such communities and individuals. Given the essential nature of private sector participation, without which there will be little infusion of capital and expertise, and of much needed technology, ADB will seek to draw private enterprise into participating in a higher

20 ADB. 1998. *The Bank's Policy on Indigenous Peoples*. Manila.

Box 4: Participation: making a difference

Participation is the centerpiece of any water service endeavor. The most successful experiences in water use are based on involving the people who consume the water. Excluding them from participation has tended to make solutions to sustainability elusive.

In Nepal, ADB financed rural water supply projects in the 1980s where gravity-fed village water supply schemes were built by the Department of Water Supply and Sewerage and handed over to communities for operation and maintenance. Many of the schemes were not taken over by communities. They had not been consulted about their requirements, not involved in subproject design, and excluded from sharing in the costs of implementation. Subsequent projects developed community awareness and promoted active community participation in rural water supply and hygiene sanitation schemes. Water users' associations were established and communities decided how much water they needed, what they were willing to pay for, and how they would manage the facilities.

In irrigation and rural development projects, water users' associations have typically improved equity in water distribution, resolved water disputes, collected water charges, and maintained tertiary networks. In some cases they have also successfully taken over ownership of small-scale irrigation schemes. Nepal, Pakistan, and Philippines have particularly good examples of developing participatory approaches to operation and maintenance through farmer-managed irrigation schemes. A 1995 ADB postevaluation report found that poverty levels in such schemes were considerably lower in project areas in Nepal than elsewhere.

In Pakistan, an evaluation (September 1998) of the ADB-financed Second On-Farm Water Management Project showed that participatory on-farm drainage was extremely effective but was not sustained by complementary maintenance of the main drainage systems.

The efficacy of cooperative approaches was demonstrated yet again in Indonesia under the ADB-financed Irrigated Command Area Development Project (postevaluated in May 1998) where water users' associations were significantly strengthened, and contributed to equitable water allocation and improved system maintenance.

quality of water service provision. Simultaneously, ADB recognizes that women are important water users, clients, and beneficiaries, as well as managers of water for family nutrition, hygiene, health, and community activities. Equally, women are development agents, professionals, and decision-makers in water sector activities. ADB will strengthen women's ability to participate more effectively through discrete programs targeted at educating women, empowering them, and enabling their involvement in community-based decision making. Water projects supported by ADB will incorporate carefully designed components that promote the participation of civil society in identifying needs and issues, designing solutions, and establishing mechanisms for monitoring and dispute resolution. Tools, including guidelines for the design and implementation of successful participatory processes in water sector activities, will be developed.

Gender. To ensure that water sector activities are gender-responsive at policy and institutional levels, ADB will promote the integration of gender concerns in policies, plans, programs, and projects. Not enough progress has been made in this area in the region and more gender-specific data are required in the water sector. Although gender issues and solutions in water supply, sanitation, and hygiene are comparatively well researched and implemented, good practices in connection with water and land rights, and in resource management and conservation, have not been widely adopted.[21] The key elements in a gender approach to planning, implementing, and evaluating water sector activities are (i) including a gender analysis at the design stage, (ii) incorporating explicit gender equity provisions in the objectives and scope of the activity, and (iii) disaggregating data in monitoring and management information systems along gender lines. These elements will be incorporated in ADB's water sector operations.

Improving governance

Core concepts. The finite nature of water requires ADB to promote the governance of its conservation and management to the highest possible standards. Legal and regulatory systems in the DMCs need to ensure that water service providers and resource managers are held accountable for their performance relative to prescribed standards. The allocation of water to high-value uses is a matter of economic accountability and ADB will support the DMCs in developing appropriate methodologies for improved efficiency. Externalities, especially social and environmental, will be taken into account in the allocation. The promotion of participation involving public, private, community, and NGO stakeholders is a key element of this policy. The quality of predictability will depend on the existence of laws, regulations, and policies to regulate water sector activities, and their fair and consistent application. Likewise, transparency will be most effective when governments ensure the timely availability of information about water policies and projects to the general public, and provide clarity about government rules, regulations, and decisions in the sector. ADB will work to establish appropriate standards of

21 ADB. 1998. *The Bank's Policy on Gender and Development.* Manila.

predictability and transparency in line with its anticorruption policy.[22] It will dialogue with governments to modify their roles and increasingly adopt functions of a regulatory nature.

Building capacity. Sector capacities require strengthening in a variety of ways. The policy environment, the sector institutions, and the development of human resources working in the sector, all need upgrading. Public, private, NGO, and community organizations active in the sector need help with institutional development and analysis, water policy formulation, legislation, water resource planning, real-time management of basin operations, data management and interpretation, simulation modeling and other analytical techniques, socioeconomic analysis and skills, community skills, and monitoring and evaluation. ADB will help determine priorities in capacity building and selectively assist its partners through a process of monitoring, training, research, and feedback. Good practices will be cross-fertilized and agencies encouraged to adopt systems of incentives that create the demand for improved capacity.

Capacities in the private sector to manage water services efficiently are relatively stronger than in the public sector. Much of the required capacity-building effort will be focused on the national approach and the need for integrated water resource management. Resources will need to be invested cost effectively in the public sector. ADB will promote the development of sustainable plans for capacity building; these will include the establishment of indigenous institutional arrangements for skills development at basic and advanced levels. The plans will incorporate processes that allow the sharing of subregional or regional experiences.

Developing synergy. Knowledge and skills are essential to improved governance and the water sector is no exception. To optimize the work of knowledge and skills development institutions, and to promote regional self-help, a regional research and capacity-building network among these institutions provides a cost-effective approach. The network could offer a comprehensive program of short- and long-term courses in member institutions throughout the region, combined with case study research, on-the-job training scholarships in resource

22 ADB. 1998. *Anticorruption Policy* (On-line). Available: http://www.adb.org/documents/policies/anticorruption/ default.asp.

management agencies and service providers, and short executive seminars for high-level decision makers. In practical terms, a regional network such as this will enable (i) improved and dedicated research on key water management subjects, (ii) sharing of research capacities and research results, (iii) broadening of the pool of skilled personnel in the region, (iv) opportunities for the region to relate with the experiences and skills in other regions, and (v) promotion of a stronger sense of awareness of water management problems and prospects in the region. Countries of the Association of South East Asian Nations have already recognized the merits of such a network. ADB will assist its development partners to establish the network as a complementary capacity building ingredient in the water sector.

The policy and ADB's poverty reduction strategy

ADB's poverty reduction strategy describes poverty as a deprivation of essential assets and opportunities *(footnote 9)*. These include basic needs such as shelter, education, water and sanitation, and health care. About 850 million people in Asia lack access to safe drinking water, and several million die annually of water-related diseases. It is the poor who suffer most from water shortages, and their access to water is rarely a priority for providers. The strategy also recognizes that the natural environment, including water, is of crucial importance to the poor—and especially the rural poor—because so many are forced to live on fragile lands and waters that lack sensitive resource management. This water policy recognizes the critical impacts—on the poor in particular—of water scarcity, water pollution, and degradation of watersheds, and highlights the importance of better management of this resource.

The key elements of the strategy's framework for poverty reduction are (i) pro-poor sustainable growth, (ii) social development, and (iii) good governance. Poverty reduction strategies need to be accompanied by policies and actions that enhance the quality and productivity of the environment and natural resources, to support pro-poor sustainable growth. Strategies for social capital development that will increase the opportunities for the poor to participate in the workings of society include, as an important first step, the promotion

of community-based groups to undertake activities such as natural resource management. Social development strategies will also promote the full participation of women in poverty reduction programs, including those involving water and sanitation, and environmental restoration. Good governance is critical to reducing poverty; it can facilitate participatory, pro-poor policies; ensure the transparent use of public funds; and promote the effective delivery of public services. The delivery of basic services (such as safe drinking water) matters most to the poor, and requires accountable institutional structures and participation by the poor. A long-term objective is, therefore, to empower the poor and develop institutional arrangements that foster participation and accountability at the local level.

The water policy addresses each of these elements, and defines a framework for water sector interventions to be implemented by operational and support departments. It complements the poverty reduction strategy by defining a sector approach to addressing issues that impact on poverty reduction.

Thus, the policy seeks to enhance the quality and productivity of water resources, by promoting national water sector reforms through a river basin approach to integrated water resource management. This approach is also extended to a subregional and regional basis, in the case of transboundary river basins, recognizing that careful management of water resources is essential to achieve and sustain equitable, pro-poor economic growth.

The policy notes that communities need to be empowered, educated, and involved in the process of water management, to provide more equitable access to water for the poor. ADB will promote granting of entitlements in water or usage rights, so that the poor have a claim to a basic human need. These rights are to be protected by regulatory agencies whose establishment is supported by the policy. ADB will encourage a participatory approach to the conservation and protection of water resources, and the replication of good practices that have demonstrated the effective management and delivery of water. Water users' associations that manage small irrigation schemes are one such example of how communities have, with the right kind of support, organized themselves to improve equity in water distribution, resolve water disputes, collect water charges, monitor water quality, and

maintain tertiary networks, resulting in lower poverty levels. Water user and sanitation committees in rural and urban areas similarly manage their own water and sanitation schemes. The policy will mandate stakeholder consultation and participation at all levels, to increase and improve access to basic water services for the poor.

Governments should be enablers and regulators of community action for the efficient delivery of water, not water service providers; they should target subsidies to the poorest, enforce the overall links in the water delivery system, and protect the environment. Good governance is also a focus of the policy, not only to promote sector reforms at a national level, but also to provide for decentralized institutions, public-private partnerships, participatory approaches allowing for greater accountability and transparency, and institutional development. In the context of autonomy for water service providers, for instance, the policy emphasizes ADB's assistance in developing contracting modalities that address social equity concerns and improve water services to the poor. The policy provides for dialogue with governments to increasingly adopt functions of a regulatory nature, and build capacity at appropriate levels to manage resources and deliver services with greater efficiency and effectiveness. This will ultimately benefit the poor.

In operational terms, the policy will enable ADB to help the DMCs undertake comprehensive water sector assessments and develop national water policies and programs. The roles of the poor in determining equitable access to water, their rights, and the obligations of service providers and regulators alike will be clearly identified in the assessments and established in the legal framework, the policies, and regulations that govern the sector. The DMCs will be consistently encouraged to review and monitor provisions that affect the poor and revise plans and programs to ensure that the poor are effectively involved.

The implementation of the policy will help the poor to protect and develop their assets. Improved irrigation efficiencies will mean better use of scarce land resources. Better-managed watersheds will allow land to be more productive. Opportunities will be gained through time saved in accessing clean water. Health will improve; fewer sick days will translate into higher productivity. The cumulative impacts of these benefits on the poor will be significant and represent a crucial synergy with the poverty reduction strategy.

Getting the policy to work

Main features. The policy will be linked to country operational strategies. Whenever water is recognized as a prime development issue in a DMC and the country strategy requires ADB to address water sector issues, the policy will support identification of issues and development of approaches to tackle them. Three principal factors will govern policy implementation. Integrated packages of policy support, capacity building, sector reform, and investment support set in a long-term framework will be provided by ADB. Investments in the sector will be catalyzed by promoting policy, legal, and institutional reform to create an environment where enhanced levels of public-private partnerships become possible and where higher private investments are leveraged. Since water transcends national boundaries, the case for regional cooperation is strong. ADB will promote the regional and subregional exchange of information and experiences in water sector reform, and support regional water partnerships, programs of comparative analysis and research that effectively underpin national policies and plans. Whenever requested jointly by riparian countries concerned, and based on a prioritized assessment of resources, ADB will support the coordinated management of water as a shared natural resource among the DMCs.

Sequenced approach. Implementation will initially concentrate on policy dialogue and water sector assessments to reach agreements with development partners on appropriate national water sector reforms in selected DMCs. These reforms will include the adoption or

revision of a national water policy, law, institutional arrangements, information management, and other reforms to expedite an integrated approach to water service delivery and to water resource management in line with an action agenda. Thereafter, plans to invest in a new generation of integrated investment packages will be established and linked to resources. The plans will be based on the country water action agenda,[23] and will be guided by the country operational strategies. ADB will selectively support programs based on the individual water action agendas that embody principles of integrated water resource management. Country capacity to undertake sustainable reform will be continuously assessed and factored into individual water action agenda. Sequenced capacity building will be a key element of the agendas. Projects in existing pipelines that are not based on such agendas will be reviewed and supported selectively if they conform to the broad principles contained in this policy and add value to the objectives of water conservation and efficiency in management.

Transition. Policy implementation will involve a period of transition. ADB will ask the DMCs concerned to establish oversight of sector reforms and ongoing and planned water projects through a national water apex body. This apex body, modeled on the lines of a national water council, commission, or authority, will promote an integrated water sector approach and package new projects as an integral part of the action agenda. The apex body will facilitate policy dialogue with ADB and be responsible for the action agenda; it will also establish the basis for a longer-term investment partnership with ADB and other funding agencies. Once integrated water resource management has become established in a country, the apex body may undertake functions that are more regulatory in nature.

Partnerships. The challenges of ensuring that water is conserved and managed wisely are huge and no single agency can hope to address them in isolation. Strengthening partnerships will be crucial for policy implementation. ADB will seek closer cooperation principally with governments, other international and bilateral agencies, the private sector, research institutes, and NGOs. Such cooperation will be factored into the action agendas and partnership agreements established to

23 Comprehensive water sector assessments have commenced with ADB assistance in some DMCs, including PRC, Lao People's Democratic Republic, and Sri Lanka.

foster a sense of accountability. Partnerships with the development community will be sought to maximize the impact of external resources. The partnership approach will clearly identify responsibilities in terms of legislative change, policy reform, institutional change, capacity building, and financing of high priority investments. This coordination will be at country, regional, and global levels and will cover operational, sector, and awareness creation work. Simultaneously, cofinancing, both official and private, will be pursued to provide technical assistance and to help finance priority projects.

Adopting the Policy. The policy will guide operational and support departments and offices concerned. A Board paper will be circulated five years after approval of the policy with a comprehensive review of its implementation. The review will be conducted by an expert group, to be commissioned by ADB. It will include ADB staff, advisers drawn from the DMCs, other external support agencies, and international specialists. An in-house review of policy implementation will also be undertaken in the third year jointly by the agriculture and social sector departments; it will be reported to the Board through an information paper.

Skills. ADB will maintain an adequate number of water specialists[24] in its operational departments and supporting offices to meet the policy objectives. The skills mix of ADB staff will be adjusted to respond to changing needs of the DMCs in sector assessments; policy, legal, and institutional reforms; and the design of integrated investment packages. The participation of water specialist staff in interdivisional and interdepartmental teamwork will be integrated in workplans. Senior water specialists will act as resource persons in policy support, monitoring, and capacity-building activities. A focal point will be established in Agriculture and Social Sectors Department (East) to support efforts aimed at improving the quality of ADB's water sector operations. The focal point will

(i) collect and disseminate information on good practices; technical, institutional, and legal innovations in water use and management; and operations of other funding agencies;

24 The specialist staff will include (i) water resource specialists to deal with resource development and management requirements, water sector assessments, and implementation of a comprehensive approach to water operations in the selected DMCs; and (ii) specialists in specific water services such as water supply, sanitation, wastewater treatment, irrigation, flood control, drainage, and hydropower.

(ii) develop and maintain a database and a monitoring system for ADB's water sector operations;
(iii) prepare progress reports on ADB's water operations;
(iv) help identify and prepare appropriate skill development programs for water sector staff; and
(v) promote networking with international, regional, and national water sector institutions, and coordination among funding agencies.

Resources. This policy aims to provide a comprehensive and integrated framework through which ADB will reinforce a qualitative shift in its operations that places greater emphasis on the integrated water resource management approach. DMC efforts to better conserve and manage a depleting natural resource will be supported. The policy notes that ADB's water strategies in the DMCs will derive from overall country strategies. Since financial and other resources needed to support DMC development efforts are limited, resources to address water-related issues will have to be carefully prioritized relative to the requirements of other critical development needs. It is expected that most additional DMC needs for the water sector will be managed through a reordering of development priorities. Increases in investments in the water sector will have to correspond with increases in capacities to manage the investments. The process is expected to be gradual and will have to be carefully synchronized.

Against this likely scenario, ADB will need to adopt a flexible and dynamic approach to guide its resources in the water sector. Lending programs for the water sector will be driven by country strategies and sector priorities. Correspondingly, staff resources and skill mixes within ADB will be adjusted as required. For instance, in addition to the core specialist staff, water sector projects will require greater inputs from social scientists, resource economists, and private sector specialists. Staff requirements will, therefore, be continuously reviewed in the context of the evolving country water action agenda and the extent of ADB support for the implementation of the agenda.

Recommendation. It is recommended that the Board approve the policy and the implementation arrangements proposed.

Appendixes

Number	Title	Page
1	Water Sector: regional trends and projections	44
2	Major international and regional initiatives in water	46
3	ADB and water: a portrait over three decades	50

Water sector: regional trends and projections

Figure A1.1: Water withdrawals against available resources (1900-2025)

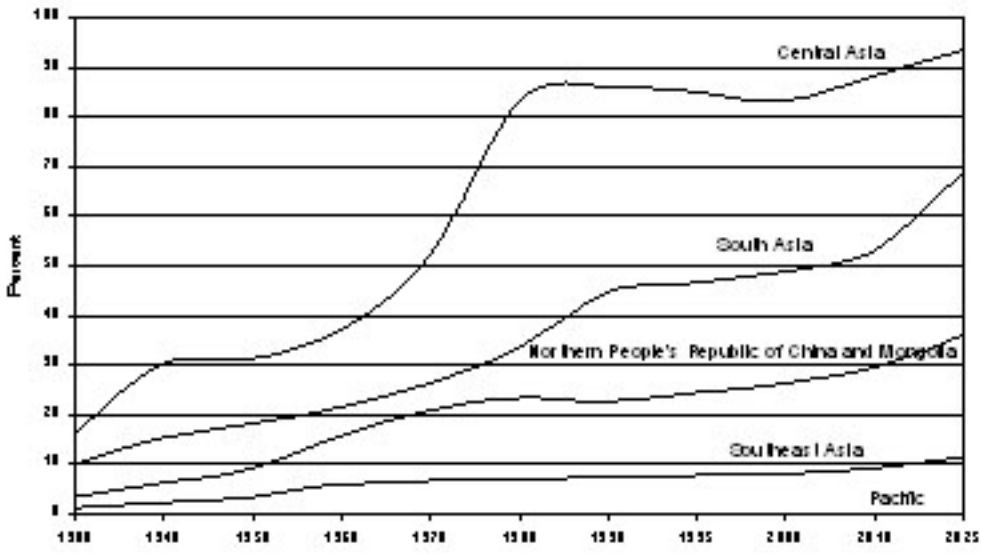
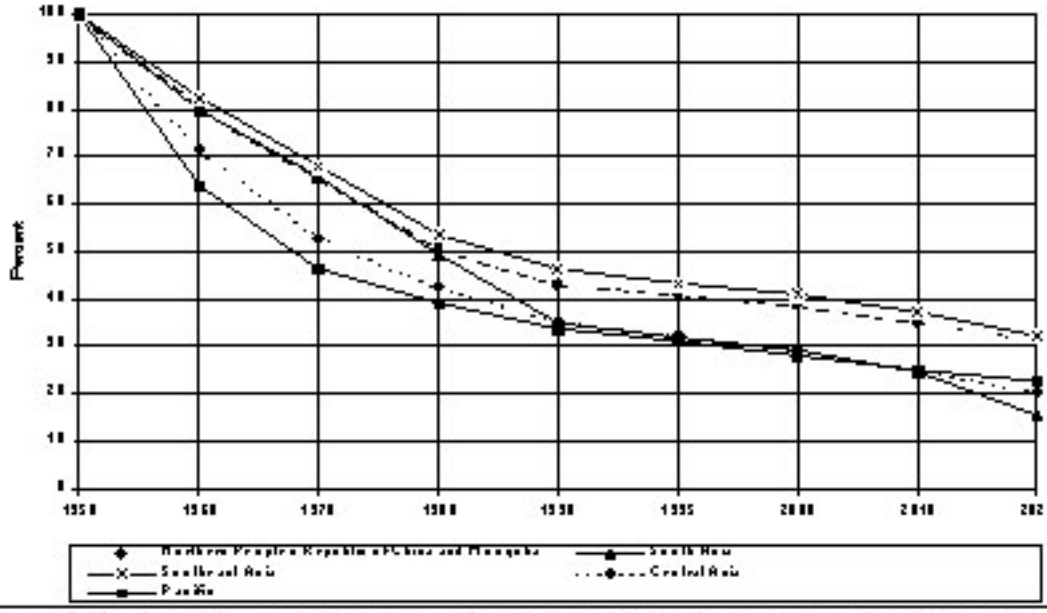
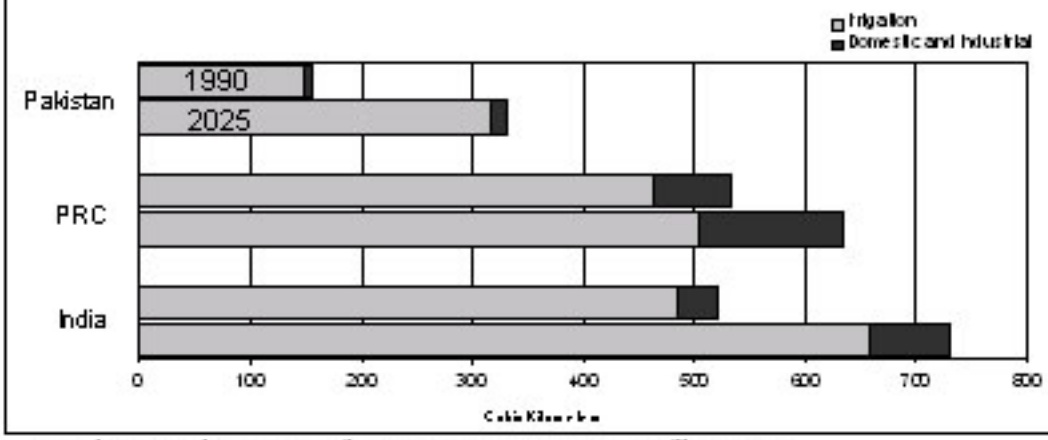


Figure A1.2: Decline in water resources per capita (1950-2025)



Source: Shiklomanov, I. A. 1997. *Assessment of Water Resource and Water Availability in the World.* Report prepared for the Comprehensive Assessment of Freshwater Resource of the World. United Nations: St Petersburg.

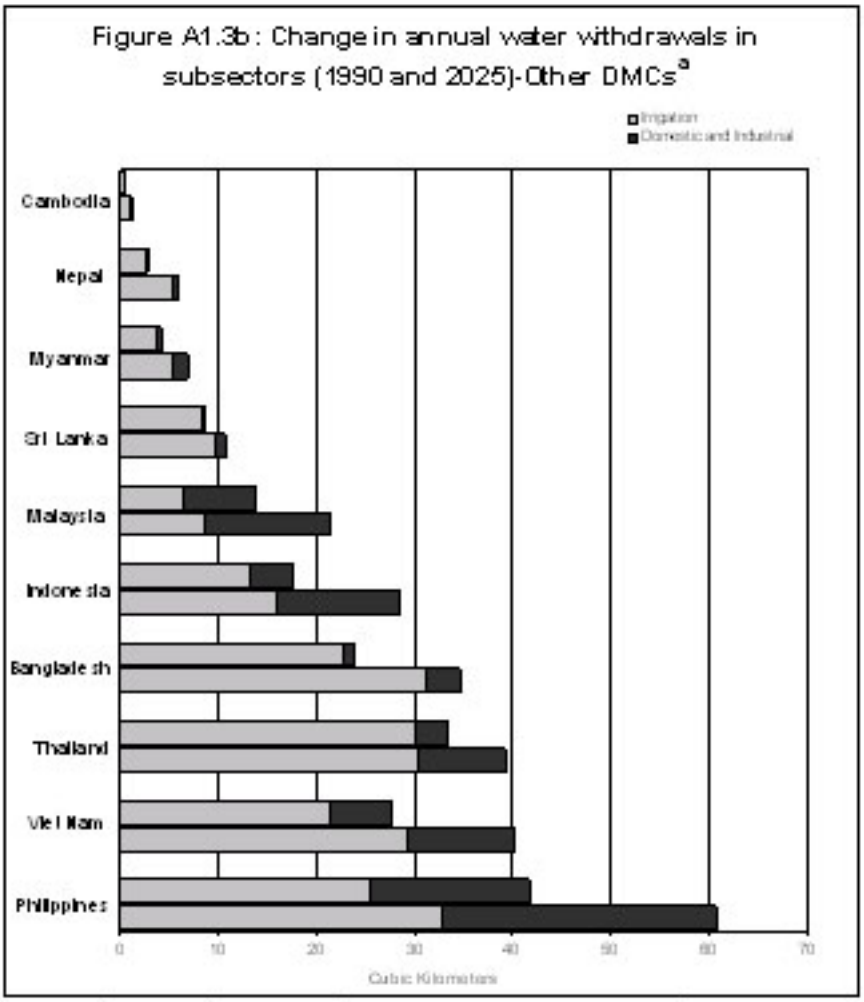
Figure A1.3a: Change in annual water withdrawals in subsectors (1990 and 2025)— Large DMCs[a]



a Baseclona mediansenario for improvements in irrigationeffectiveness.

Source: Seckler,D., U.Amarasinghe,D.Molden,R. de Silva ,andR. Barker 1998. *World Water Demand and Supply; 1990-2025: Scenariosand Issues*. International Water Management Institute: Colombo.

Figure A1.3b : Change in annual water withdrawals in subsectors (1990 and 2025)-Other DMCs[a]



a Baseclona mediansenario for improvements in irrigationeffectiveness.

Source: Seckler,D., U.Amarasinghe,D.Molden,R. de Silva ,andR. Barker 1998. *World Water Demand and Supply; 1990-2025: Scenariosand Issues*. International Water Management Institute: Colombo.

Major international and regional initiatives in water

1990 **Safe Water and Sanitation for the 1990s** (New Delhi): appealed for concerted action to ensure access for all to basic human needs—safe drinking water and environmental sanitation.

1991 **A Strategy for Water Sector Capacity Building** (Delft): defined the basic elements of capacity building necessary to create an enabling environment in the water sector.

1992 **International Conference on Water and Environment** (Dublin): set out the four principles of water resources management which became known as the *Dublin Principles*.

1992 **United Nations Conference on Environment and Development** (Rio de Janeiro): promoted integrated water resources management based on the perception of water as an integral part of the ecosystem, a natural resource, and a social and economic good.

1993 **World Bank Policy Paper on Water Resources Management**: promoted national water sector assessments and integrated water resources management in river basins.

1996 **Regional Water Policy Consultation** (Manila): called for national action programs to manage water resources and improve water services to sustain human and economic development in each country in the coming decades. To catalyze investments in integrated water sector programs in

the region, it was concluded that ADB should target the water sector in its operations with a long-term perspective and through effective partnerships. Seven principles of effective water policy were formulated, evolving from the four Dublin principles.

1996 Establishment of the **Global Water Partnership** (Stockholm): supports integrated water resources management through collaboration with governments and existing networks and by forging new collaborative arrangements.

1996 Establishment of the **World Water Council** (Marseilles): promotes awareness of critical water issues at all levels including the highest decision-making levels.

1996 **United Nations ESCAP Workshops** (Manila and Jakarta): recommended the establishment of water pricing policies and structures for urban and rural water supply and irrigation in the Asian and Pacific region.

1997 Establishment of the **World Commission on Dams**: aims to review the effectiveness of large dams and develop standards, criteria, and guidelines to guide decision makers in planning, implementing, and decommissioning dams. Key issues in three areas—social, environmental, and economic/engineering—are being examined to work toward a new consensus on the role of large dams in sustainable development.

1997 **First World Water Forum** (Marrakech): recommended action to meet basic human needs for clean water and sanitation, establish effective mechanisms for management of shared waters, preserve ecosystems, encourage efficient use of water, address gender equality issues in water use, and encourage partnerships between civil society and governments.

1997 Subregional **Water Policy Consultation for Southeast Asia** (Manila): ADB supported the establishment of the Southeast

Asian Technical Advisory Committee of the Global Water Partnership. Advocated the establishment of national water sector apex bodies, river basin organizations, and water conservation measures. Prepared an action plan for a Southeast Asian water partnership.

1997 **United Nations General Assembly** (New York): adopted the Convention on the Law of the Non-Navigational Uses of International Watercourses for ratification by 2000.

1997 **ASEAN Summit of Heads of State**: adopted resolution to cooperate in ensuring the conservation and sustainability of water resources, and in the systematic development and transfer of knowledge and technology. The Philippines is to initiate the cooperation. (Establishment of the ASEAN Network of Water Resources Agencies is ongoing.)

1998 **Water and Sustainable Development** (Paris): raised concerns about tendencies to focus on scarcity as the main water crisis while neglecting problems of poor water management and the proliferation of regional coordination issues.

1998 **Sixth United Nations Commission on Sustainable Development** (New York): focused on strategic approaches to freshwater management in follow-up to the Rio de Janeiro conference.

1998 Subregional **Water Policy Consultation for South Asia** (Colombo): ADB supported the establishment of the South Asian Technical Advisory Committee of the Global Water Partnership. Advocated national water policies, participatory planning and management, equity, gender, and accountability. Prepared an action plan for a South Asian water partnership.

1999 **Fifth Joint International Conference on Hydrology** (Geneva): drew attention to the catastrophic consequences of water mismanagement on the poorer communities in developing countries.

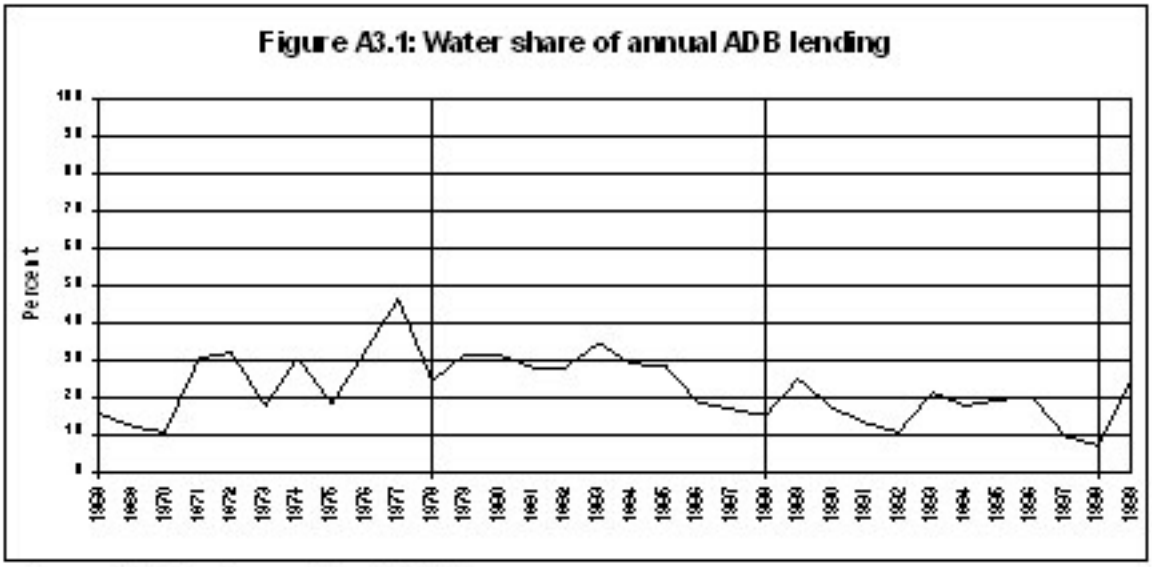
1999 **Water Sector Mapping and Vision for Southeast Asia** (Manila): ADB supported Southeast Asian countries in identifying water sector visions and resource mapping.

2000 **Water Vision and Framework for Action for Southeast Asia** (Manila): ADB supported Southeast Asian countries to formulate a regional water vision and framework for action, in preparation for the Second World Water Forum.

2000 **Second World Water Forum** (The Hague): The World Water Council presented a Vision for Water, Life, and the Environment in the 21st Century. A framework for action to achieve the vision was prepared by the Global Water Partnership. The Ministerial Conference for Water Security in the 21st Century following the forum submitted a declaration highlighting the main challenges to achieve water security in the 21st century: meeting basic needs, securing the food supply, protecting ecosystems, sharing water resources, managing risks, valuing water, and governing water wisely.

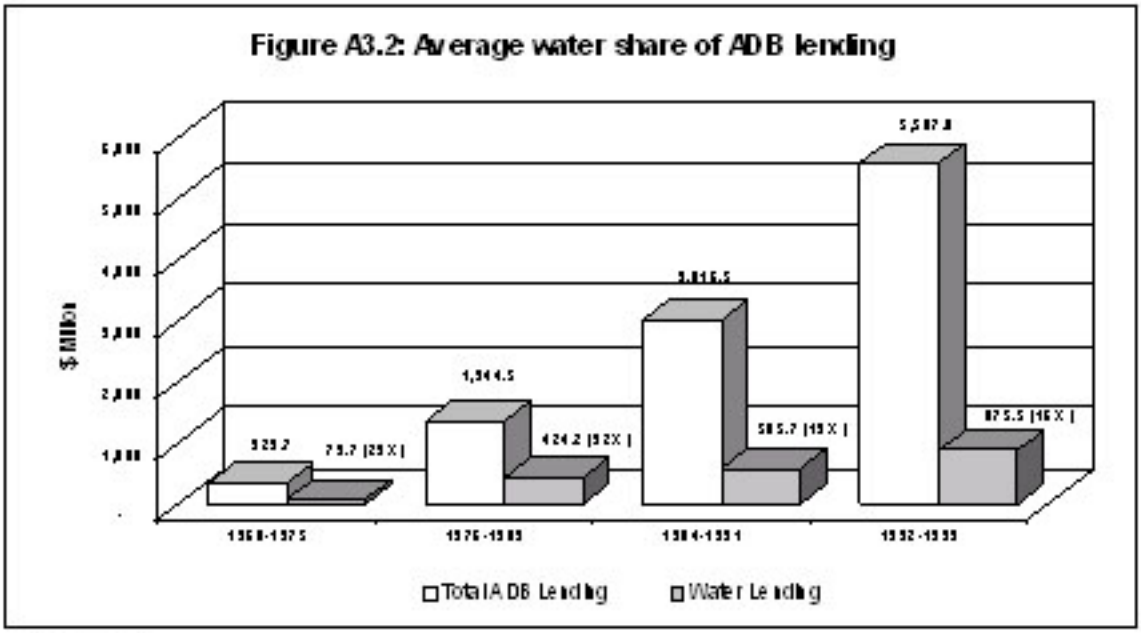
ADB and water: a portrait over three decades

Figure A3.1: Water share of annual ADB lending



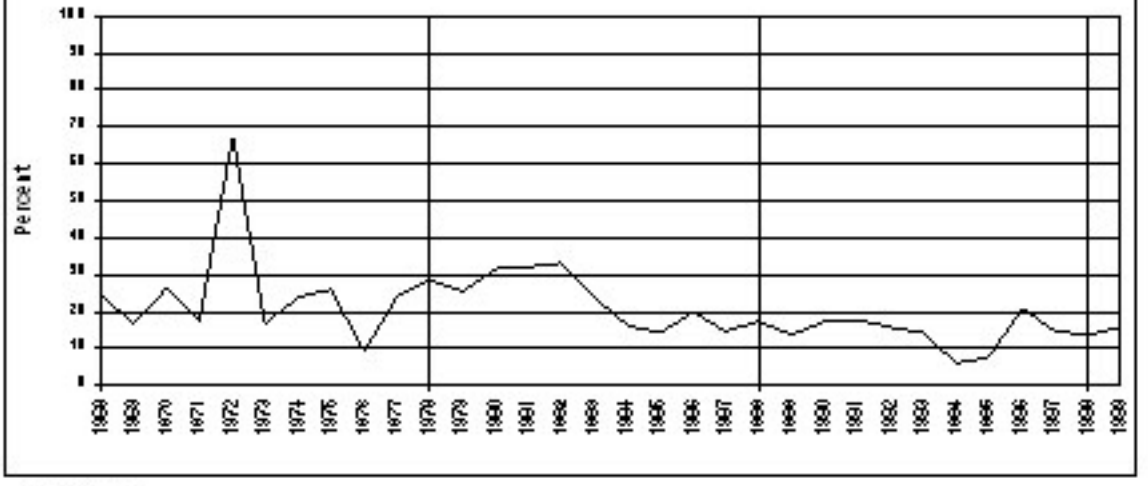
Source: Asian Development Bank (ADB).

Figure A3.2: Average water share of ADB lending



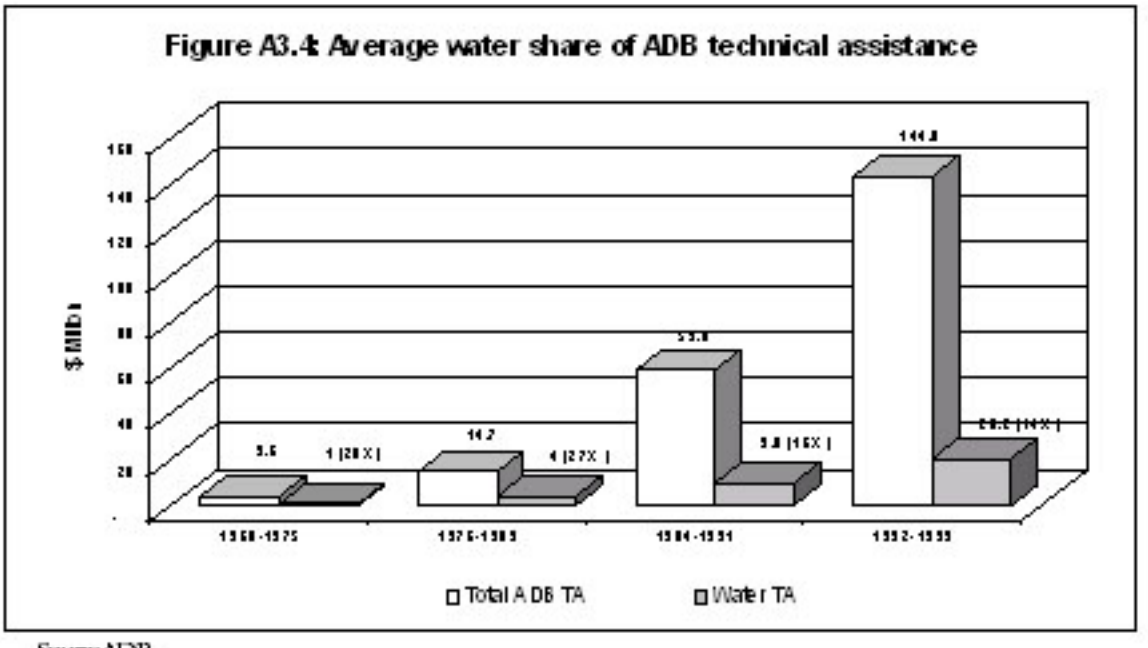
Source: ADB.

Figure A3.3: Water share of annual ADB technical assistance



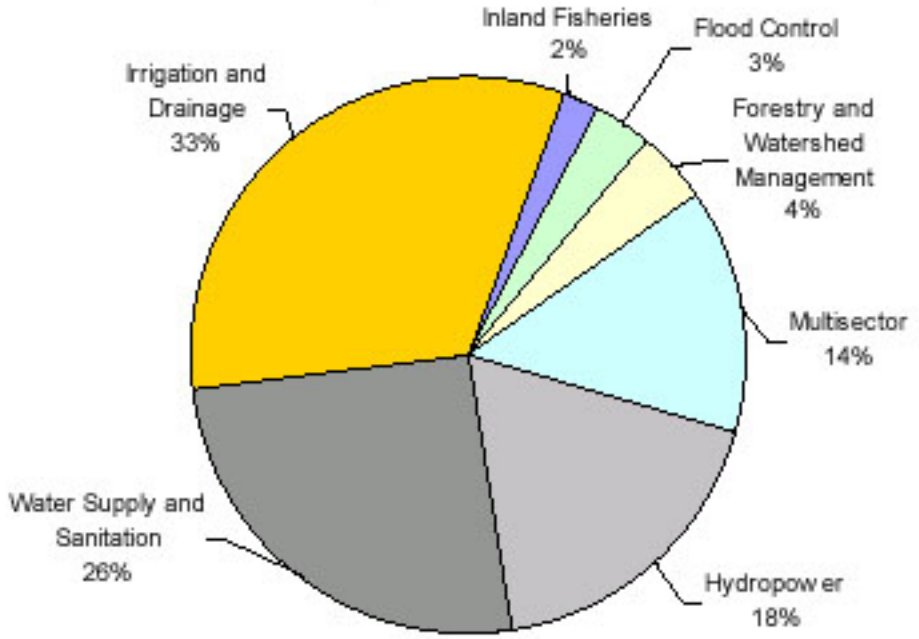
Source: ADB.

Figure A3.4: Average water share of ADB technical assistance



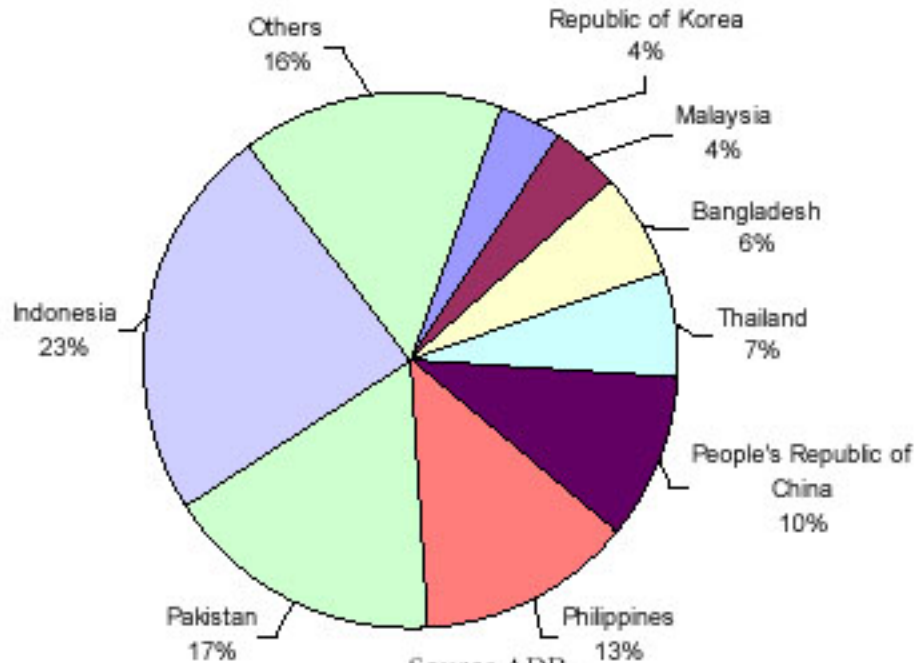
Source: ADB.

Figure A3.5: Cumulative water lending by subsector (1968–1999)



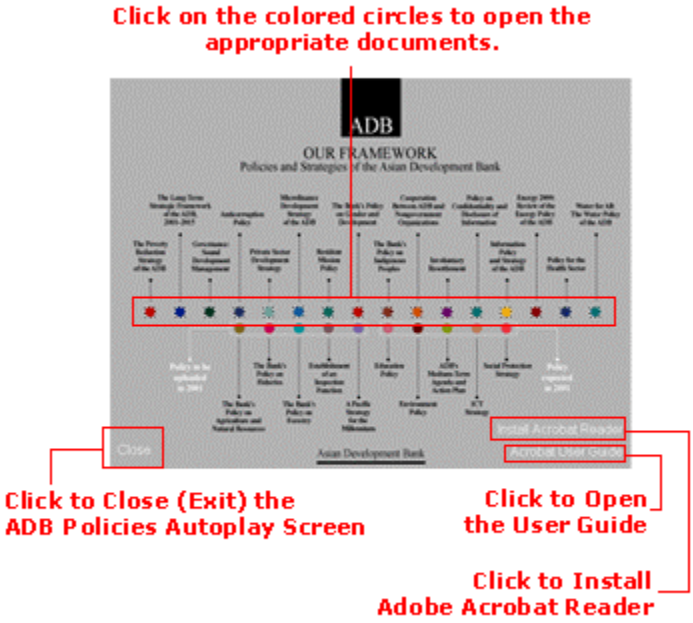
Source:ADB.

Figure A3.6: Geographical distribution of ADB water lending (1968–1999)



Source:ADB.

How to Use The ADB Policies Menu Screen



Clicking on the Region would automatically open the ADB Policies PDF file.

When the ADB Policies Menu Screen loads it would detect whether or not your computer has the following software: **Adobe Acrobat Reader** and **Apple QuickTime**. In case your computer doesn't have the required software, the menu would ask you to install the required software before entering the PDF file. This is needed to properly view files like audio clips, video clips and the PDF document.

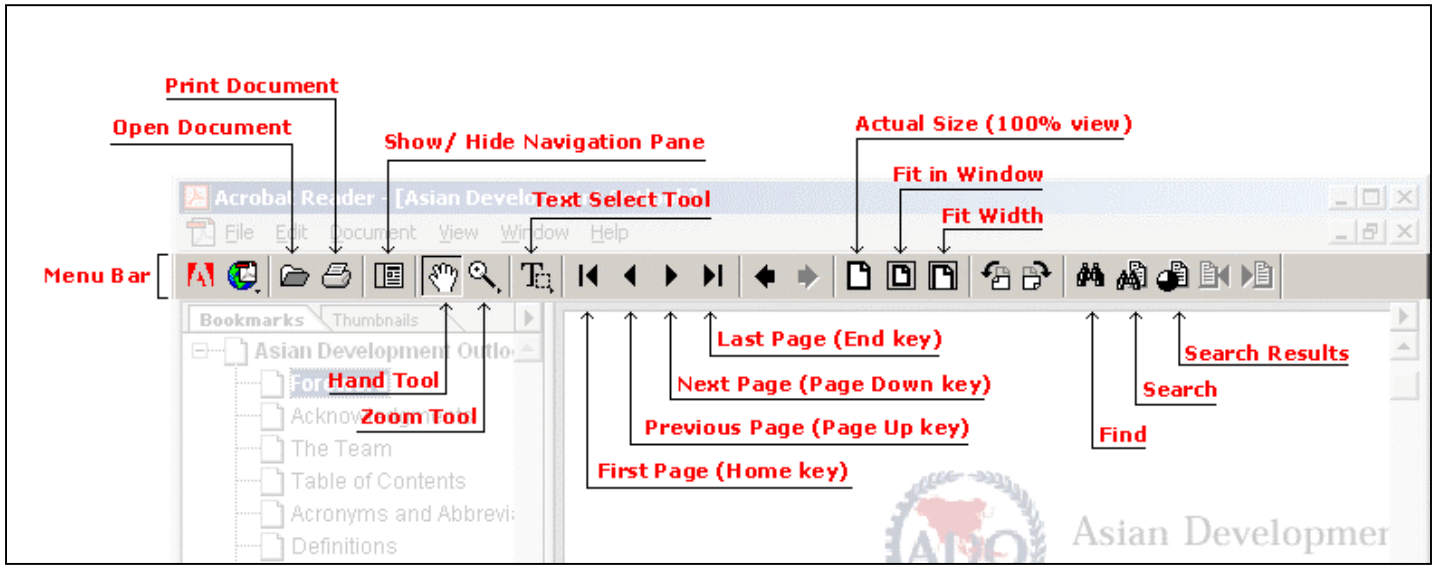
The **Adobe Acrobat Reader** included in this CD-ROM is **version 4.05 with Search Function** (the Search Function is not available in all Acrobat Readers). You will need this specific version in order to use the Search option.

Lower versions of QuickTime may not display video clips properly, Quicktime version 4 is available in the CD-ROM.

How to Use Adobe Acrobat Reader

Navigation

Use these links to navigate through the PDF file.



 Open file

Click on the **open file icon** and navigate to the file you wish to open.

 Save

To save the document on your hard drive or to a floppy disk, click on the **save icon** or select **File > Save As**. Be sure to remember where you have saved the file.

 Print

To print the document, click on the **print icon** or select **File >Print**. Then type in the specific page or pages you would like to print out, then hit "OK."

 navigation pane

To show or hide the navigation pane that is shown on the left of the screen, click on the **show / hide navigation pane icon**. When the navigation pane is visible, you can use the pane to double click on the page that you want to view.

To navigate through the document, click on the **first page icon**, **previous page icon**, **next page icon**, and **last page icon**.

 screen sizes

To change the size of the document, click on the **actual size icon**, **fit in window width icon** or **fit width icon**.

Find

To find a word or phrase in an active or currently open PDF document, click on the **find icon**. Then type in the word or phrase and click "Find".
The word or phrase found will be highlighted in the document.

Search

To search a word or phrase across all the related PDF files (e.g. all ADB Policies) click on the **search icon**. Then type in the word or phrase and click "Search".

Search Results Menu

This menu displays all the files which contain the word or phrase typed in the **search icon**.

Text Select

Click the **select text icon** then highlight the text you want to copy and paste in another document.

Zoom

If at any time during your viewing of an Acrobat file you wish to make the page smaller or larger, select the magnifying glass or **zoom icon** to either zoom in on the page or to zoom out.

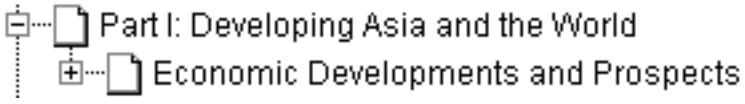
Hand tool

Use the **hand tool icon** to freely navigate or move the screen.

Table of Contents

When you open a file in Acrobat Reader, a table of contents will automatically be displayed on the left side of your screen. This is similar to your Windows Explorer. Click on the boxes with the cross to view subtopics in the Table of Contents.

 Click this icon to hide or view subtopics.



Changing Screen Sizes

To change the zoom, click on the drop down arrow at the bottom of the screen. Change to the desired setting.

Annotations or Notes

If you see any note icons in the manual that look like this: double-click on them to display their contents. The screen would then display a note with instructions.

Frequently Asked Questions

Why don't the video clips display properly?

Possible cause is that a lower version of QuickTime is installed in your system or your QuickTime installation is corrupted. To correct this, uninstall your current version and install QuickTime Version 4 which is included in the CD-ROM in the "QuickTime" folder.

Why is the Menu Screen still showing the install QuickTime or Acrobat Reader option when I already have QuickTime and Acrobat installed in my system?

This is because you have a lower version of Acrobat Reader/QuickTime. This might also be caused by a prior uninstall operation which was unsuccessful

leaving traces of Acrobat or QuickTime files. To solve this, uninstall properly the previous Acrobat Reader/Quicktime and install the latest version.

Why do I get an error message when I try to open a PDF file?

Most error messages are caused by an incorrect or corrupted installation of Adobe Acrobat Reader and QuickTime. Installing the Acrobat Reader and QuickTime provided in this CD can usually solve these errors. Please make sure to uninstall your current versions of Acrobat Reader or QuickTime before proceeding to install the ones provided in this CD.

Nothing happens after inserting the CD in my computer. Why is this so?

This is because the Autoplay Feature, which is enabled by default on Microsoft Windows 95/98/NT/2000 systems has been disabled. To enable this Autoplay Feature, right click “My Computer” on your desktop. Select “Properties”. Select the “Device Manager” tab. Select your CD-ROM device (e.g. Sony, Asus, Creative, Acer, etc.) and right click on its icon and then select “Properties”. Under the “settings” tab make sure the “Auto-insert Notification” option is checked then click "OK" to close dialog boxes. You might be prompted to restart your computer. Your system should now have the Autoplay Feature enabled.

Alternatively, you can manually open the CD by clicking on Start>Run then type “D:/autorun.exe” where D: is the drive letter of your CD-ROM drive then Click "OK".

You can also open the CD by browsing to your CD-ROM drive using Windows Explorer, double-click on the “Autorun” icon which is on the CD-ROM.

I only need two pages from the whole document but I do not want to save the entire PDF file. How do I go about this?

You cannot save individual pages from the PDF files. You can, however use the Text Select tool to copy sections of text from the document and paste it into your favorite word processor.

In some cases, sections of the document are made available individually in the CD-ROM. Browse the CD using Windows Explorer to view the files. These are generally PDF files with appropriate titles.

How do I find the information I want in the PDF file?

You have several options:

Use the bookmarks. The bookmarks at the left side of the page indicate the chapters, sections, and subsections in the document. Click on any of the bookmarks to go to the appropriate section.

Do a search of the document.

Click the find tool, or choose Tools > Find.
In the Find What Text box, enter the text to find and click "Find".

Why doesn't the PDF file print properly?

Printing problems may be caused by many factors.
Ensure that you have enough memory allocated to your printer and that your system meets the minimum requirements for using Acrobat Reader.
Please also make sure you have the correct settings and drivers to use your printer.

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